



AFCTN Test Report 94-040

AFTB-ID
93-020



Technical Graphics Transfer

Using:



Texas Instruments' Data



MIL-D-28000A (IGES)
MIL-R-28002A (Raster)
MIL-D-28003 (CGM)



Quick Short Test Report

15 March 1993

19960822 050



Prepared For:
Electronic Systems Center
Det 2 HQ ESC/AV-2
4027 Colonel Glenn Hwy, Suite 300
Dayton, Ohio 45431-1672

DTIC QUALITY INSPECTED 3

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

AFCTN Test Report
94-040

AFCTB-ID
93-020

Technical Graphics Transfer

Using:

Texas Instruments' Data

MIL-D-28000A (IGES)

MIL-R-28002A (Raster)

MIL-D-28003 (CGM)

Quick Short Test Report

15 March 1993

Prepared By

Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact

Gary Lammers
(513) 427-2295

AFCTN Contact

Mel Lammers
(513) 427-2295

DTIC QUALITY INSPECTED 3

DISCLAIMER

This document was prepared as an account of the work sponsored by the Air Force. Neither the United States Government, the Air Force, nor any of their employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, nor represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the Air Force. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the Air Force, and shall not be used for advertising or product endorsement purposes.

Available to the public from the
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

This report and those involved in its preparation do not endorse any product, process, or company stated herein. Use of these means by anyone does not imply certification by the Air Force CALS Test Network (AFCTN).

Contents

1.	Introduction.....	1
1.1.	Background.....	1
1.2.	Purpose.....	2
2.	Test Parameters.....	3
3.	1840A Analysis.....	5
3.1.	External Packaging.....	5
3.2.	Transmission Envelope.....	5
3.2.1.	Tape Formats.....	5
3.2.2.	Declaration and Header Fields.....	5
4.	IGES Analysis.....	5
5.	SGML Analysis.....	7
6.	Raster Analysis.....	7
7.	CGM Analysis.....	7
8.	Conclusions and Recommendations.....	9
9.	Appendix A - Detailed IGES Analysis.....	10
9.1.	File igstst.....	10
9.1.1.	Parser/Verifier Log.....	10
9.1.2.	AutoCAD R12 Log File.....	16
9.1.3.	Output AutoCAD R12.....	21
9.1.4.	Output Cadkey v5.02.....	22
9.1.5.	Output Checkmark v1.00.....	23
9.1.6.	Output IGESView.....	24
9.1.7.	Output iges2draw/IslandDraw.....	25

9.1.8.	Output IGESWorks.....	26
9.1.9.	Output Preview.....	27
10.	Appendix B - Detailed CGM Analysis.....	28
10.1.	File SAMP1.....	28
10.1.1.	Parser Log MetaCheck.....	28
10.1.2.	validcgm Log.....	30
10.1.3.	Output XSoft cgm2ps.....	31
10.1.4.	Output cgm2draw/IslandDraw.....	32
10.1.5.	Output CADLeaf.....	33
10.1.6.	Output Designer.....	34
10.1.7.	Output Harvard Graphics.....	35
10.1.8.	Output HiJaak Windows.....	36
10.1.9.	Output IslandDraw.....	37
10.1.10.	Output Ventura Publisher.....	38
10.2.	File SAMP2.....	39
10.2.1.	Parser Log MetaCheck.....	39
10.2.2.	validcgm Log.....	41
10.2.3.	Output XSoft cgm2ps.....	42
10.2.4.	Output cgm2draw/IslandDraw.....	43
10.2.5.	Output CADLeaf.....	44
10.2.6.	Output Designer.....	45
10.2.7.	Output Harvard Graphics.....	46
10.2.8.	Output HiJaak Windows.....	47
10.2.9.	Output IslandDraw.....	48
10.2.10.	Output Ventura Publisher.....	49

10.3. File ticgm04.....	50
10.3.1. Parser Log MetaCheck.....	50
10.3.2. validcgm Log.....	52
10.3.3. Output XSoft cgm2ps.....	53
10.3.4. Output cgm2draw/IslandDraw.....	54
10.3.5. Output CADLeaf.....	55
10.3.6. Output Designer.....	56
10.3.7. Output Harvard Graphics.....	57
10.3.8. Output HiJaak Windows.....	58
10.3.9. Output IslandDraw.....	59
10.3.10. Output Ventura Publisher.....	60
10.4. File ticgm05.....	61
10.4.1. Parser Log MetaCheck.....	61
10.4.2. validcgm Log.....	63
10.4.3. Output XSoft cgm2ps.....	64
10.4.4. Output cgm2draw/IslandDraw.....	65
10.4.5. Output CADLeaf.....	66
10.4.6. Output Designer.....	67
10.4.7. Output Harvard Graphics.....	68
10.4.8. Output HiJaak Windows.....	69
10.4.9. Output IslandDraw.....	70
10.4.10. Output Ventura Publisher.....	71

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Texas Instrument's interpretation and use of the CALS standards in transferring technical graphics data. Texas Instruments used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a diskette.

The goal of the test was to evaluate the CGM and IGES files. The files were not names per MIL-STD-1840A and CALS headers were not included.

2. Test Parameters

Test Plan: AFCTB 93-020

Date of
Evaluation: 15 March 1993

Evaluators: George Elwood
Air Force CALS Test Bed
Det 2 HQ ESC/AV-2P
Suite 300
4027 Colonel Glenn Hwy
Dayton OH 45431-1672

Data
Originator: Michael Hurn
Texas Instruments
6500 Chase Oaks Blvd
P.O. Box 869305
Plano TX 75086

Data
Description: Technical Graphics Test
1 Initial Graphics Exchange Specification
(IGES) file
4 Computer Graphics Metafile (CGM) files

Data
Source System:

IGES

HARDWARE

Unknown

SOFTWARE

Unknown

Raster

HARDWARE

Unknown

SOFTWARE

Unknown

CGM

HARDWARE

Unknown

SOFTWARE

Unknown

Evaluation Tools Used:

MIL-D-28000 (IGES)

Sun SparcStation 2

ArborText iges2draw

IGES Data Analysis (IDA) Parser/Verifier v92

IDA IGESView v3.05

International TechneGroup Incorporated

(ITI) IGES/Works v1.3

Rosetta Technologies Prepare

Rosetta Technologies Preview v3.2

Cheetah Gold 486

AUTODESK AutoCAD 386 R12

Cadkey Cadkey v5.02

PC 486/50

AUTODESK Micro Engineering Solution

(MES) CheckMark v2.0c2

MIL-D-28003 (CGM)

SUN SparcStation 2

XSoft CAPS cgm2ps v6.0x

ArborText cgm2draw

Island Graphics IslandDraw v3.0

Cheetah Gold 486

Advance Technology Center

(ATC) MetaView R 1.12

ATC MetaCheck R 2.05

Software Publishing Corporation

(SPC) Harvard Graphics v3.05

Inset Systems HiJaak v2.1

Inset Systems HiJaak v1.0 Windows

Micrografx Designer v3.1

Corel Ventura Publisher

Standards

Tested:

MIL-D-28000A

MIL-R-28002A

MIL-D-28003

3. 1840A Analysis

3.1 External Packaging

The diskette arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a overnight shipping envelop. The exterior of the envelop was not marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The diskette was enclosed in an anti-static barrier envelop. Enclosed in the envelop was a packing list showing all files recorded on the diskette.

3.2 Transmission Envelope

The diskette received by the AFCTB did not contained MIL-STD-1840A files. The files were not named per the standard conventions.

3.2.1 Tape Formats

Files received on diskette.

3.2.2 Declaration and Header Fields

No Document Declaration file or data file headers were included on the diskette.

4. IGES Analysis

The diskette contained one IGES file. This file was evaluated using IDA's *Parser/Verifier* set for CALS Class I. This utility reported no CALS errors. It did report two basic IGES errors.

The first of these errors is the radii in entity type 100 was not equal. This error was reported several times.

*** Entity type: 100

ERROR 2242: Radii not equal at D 45; difference is 7.893829E-04.

The second set of errors relate to entity type 104 where the start and end points of the conics were off by a small number.

*** Entity type: 104

WARNING 2265: Start point off conic by 5.546356E-03 at D 51.
WARNING 2039: End point off conic by 5.546234E-03 at D 51.

The AFCTB has several tools for viewing IGES files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The file was converted using AUTODESK's AutoCAD R12 with the 5.1 IGES translator. The error log from this process is included in Appendix A, Section 9 of this report. The AutoCAD translator reported the same errors as IDA's Parser/Verifier program. The output appeared to be complete when compared to the submitted hard copy.

The file was converted using Cadkey's *ig2c* utility with no reported errors. Cadkey displayed and printed an image that appeared to be complete when compared to the submitted hard copy.

The file was read in using MES' *CheckMark* with no reported errors. The displayed and printed output compares to the submitted hard copy.

The file was imported directly into IDA's *IGESView*, displayed and printed. The resulting images compares to the submitted hard copy.

The file was converted using ArborText's *iges2draw* utility. The resulting file was read into Island Graphics' *Island-*

Draw, displayed and and printed. No discrepancies were noted between the generated image and the provided hard copy.

The file was read directly into ITI's *IGESWorks* with no reported errors. The resulting images compares to the provided hard copy.

The file was converted using Rosetta Technologies' *Prepare* and then displayed using Rosetta Technologies' *Preview*. A minor visual error was noted in the tail section of the aircraft where two lines were seen.

The IGES file meets CALS Class I MIL-D-28000A specification.

5. SGML Analysis

No Standard Generalized Markup Language (SGM)L files were included on the diskette.

6. Raster Analysis

One Raster file was included on the tape. This file could not be read by any software available in the AFCTB.

7. CGM Analysis

The diskette contained four CGM files. These files were evaluated using ATC's *MetaCheck* software with CALS options. This software reported all four files meet CALS MIL-D-28003 specification.

The files were evaluated using the beta AFCTN *validcgm* utility. This software also reported the files meet the CALS MIL-D-28003 standards.

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use

of these products is not an endorsement nor an indication of CALS capability. All operations were Performed using the default settings.

The four files were converted using XSoft's CAPS cgm2ps utility. The resulting files were then printed. Files SAMP1 and SAMP2 were the same as the provided hard copy. Files ticgm04 and ticgm05 both had problems in the font area where the font was written very large and on to several pages to the right.

The four files were converted using ArborText's cgm2draw utility with no reported errors. Files SAMP1 and SAMP2 were the same as the provided hard copies. Files ticgm04 and ticgm05 had problems with the fonts which were displayed large and across several pages to the right.

The files were imported into Carberry's CADLeaf software without a reported error. The outputs were all the same as the provide hard copies.

The files were imported into the Micrografx Designer without a reported error. The outputs were the same as the provided hard copies.

All four files were imported into SPC's Harvard Graphics v3.05 without a reported error. The generated hard copies were the same as the provided hard copies.

All four files were read into Inset Systems' HiJaak for Windows without a reported error. The generated images were the same as the provided hard copies.

All four files were imported into Island Graphics' Island-Draw. The resulting images were the same as the provided hard copies.

The four files were imported directly into Corel's Ventura Publisher without a reported error. The generated images were the same as the provided hard copies.

The four CGM files meet the CALS MIL-D-28003 specification. These files were some of the best seen across the wide range of software tools available in the AFCTB.

8. Conclusions and Recommendations

The diskette did not meet the CALS MIL-STD-1840A because it lacked the Document Declaration file and data file headers. The files were not named per the standard. This was not considered critical as the test was for the data files.

The IGES files meet the CALS MIL-D-28000A specification.

The Raster file could not be read using any utilities in the AFCTB, and do not meet the CALS MIL-R-28002A specification.

The CGM files meet the CALS MIL-D-28003 specification.

9. Appendix A - Detailed IGES Analysis

9.1 File igstst

9.1.1 Parser/Verifier Log

```
*** IGES DATA FILE ANALYSIS ***  
***      MARCH 1992      ***  
***   IGES Data Analysis   ***  
***   (708) 449-3430      ***
```

Input file is /novell/9320/igstst.igs

Checking conformance to CALS Class I (MIL-D-28000A 2/10/92)

Today is March 15, 1993 12:28 AM

*** File and Product Name Information ***

```
File name from sender   = 'igstst.igs'  
File creation Date.Time = '930302.120229'  
Model change Date.Time = ''  
Author                 = ''  
Department             = 'InterCAP Graphics Systems'  
Product name from sender = 'IGES_CALS'  
Destination product name = 'IGES_CALS V78'
```

*** Parameter Delimiters ***

```
Delimiter = ','  
Terminator = ';'
```

*** Originating System Data ***

```
System ID           = 'InterCAP Graphics Systems - V7.8103'  
Preprocessor version = 'IGES VERSION 4.0'  
Specification version = 6 (IGES 4.0)
```

*** Precision levels ***

```
Integer bits = 16  
Floating point - Exponent = 8 Mantissa = 24  
Double precision - Exponent = 8 Mantissa = 56
```

NITPICK 2329: Real constant characteristics inconsistent with specification version.

*** Global Model Data ***

Model scale = 1.0000E+00
Unit flag = 1
Units = 'INCH'
Line weights = 20
Maximum line thickness = 1.333200E-01
Minimum line thickness = 6.666000E-03
Granularity = 1.000000E-04
Maximum coordinate = 1.100000E+01

Drafting standard applicable to original data is not specified.

*** Status Flag Summary ***

Blank status:	Visible	588
	Blanked	0
Independence:	Independent	564
	Physically Subordinate	22
	Logically Subordinate	2
	Totally Subordinate	0
Entity use:	Geometry	562
	Annotation	7
	Definition	19
	Other	0
	Logical/Positional	0
	2D parametric	0
	Not Specified	0
Hierarchy:	Structure DE applies	588
	Subordinate DE applies	0
	Hierarchy property applies	0
	Not Specified	0

*** Entity Occurrence Counts ***

Entity	Form	Level	Count	Type
-----	----	-----	-----	-----
100	0	0	128	Circular arc
104	1	0	122	Conic arc - ellipse
106	11	0	24	Copious data - Piecewise planar, linear string(2D path)
110	0	0	176	Line
124	0	0	122	Transformation matrix
212	0	0	1	General note
230	0	0	3	Sectioned area (Standard Crosshatching)
308	0	0	9	Subfigure definition

404	0	0	1	Drawing
406	16	0	1	Property - Drawing size
410	0	0	1	View - Orthographic parallel

*** Entity Count by Level ***

Level	Count
0	588

*** Labeling Information ***

98% of the entities are labeled.

Unlabeled 9

Label	Count	Label	Count	Label	Count
MTL	5	HAT	3	LIN	3
ARC	2	CGM_ARC	80	CGM_POLY	191
CGM_ELLI	168	MATRIX	122	TXT	1
BOX	1	DRAWING	1	PROP SZ	1
VIEW	1				

*** Line Fonts Used in Data ***

100 102 104 106 108 110 112 114

-	-	-	-	-	-	-	-	Undefined
128	-	122	24	-	176	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

116 118 120 122 124 125 126 128

-	-	-	-	-	-	-	-	Undefined
-	-	-	-	122	-	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

130 132 134 136 138 140 142 144

-	-	-	-	-	-	-	-	Undefined
-	-	-	-	-	-	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

*** Line Widths Used in Data ***

Weight	Count	Width
Defaulted	131	(0.0067)
1	17	(0.0067)
4	71	(0.0267)
5	32	(0.0333)
3	304	(0.0200)
2	33	(0.0133)

*** Colors Used in Data ***

Defaulted 588

***** ENTITY ANALYSIS *****

*** Entity type: 100

ERROR 2242: Radii not equal at D 45; difference is 7.893829E-04.
ERROR 2242: Radii not equal at D 57; difference is 1.678785E-03.
ERROR 2242: Messages regarding unequal radii suppressed.

*** Entity type: 104

WARNING 2265: Start point off conic by 5.546356E-03 at D 51.
WARNING 2039: End point off conic by 5.546234E-03 at D 51.
WARNING 2265: Start point off conic by 5.435796E-03 at D 71.
WARNING 2039: End point off conic by 1.534992E-03 at D 71.
WARNING 2039: Messages regarding conic end points suppressed.
WARNING 2265: Messages regarding invalid start point suppressed.

*** Entity type: 106

*** Entity type: 110

-- 176 lines averaging 3.933974E-01 units --

*** Entity type: 124

122 transformation matrices, 122 non-zero translations.

NOTE 2341: 122 matrices contain translation information.

*** Entity type: 212

1 text strings in data file.

Average text aspect ratio in file is 0.7430643.

Minimum text aspect ratio in file is 0.7430643.

Maximum text aspect ratio in file is 0.7430643.

FONTS USED IN FILE

FONT	COUNT	NAME
------	-------	------

1	1	Default ASCII Style
---	---	---------------------

*** Entity type: 230

*** Entity type: 308

Subfigure name at D 5: 'IGES_ARROW_1'.

Number of included entities = 2.

Subfigure name at D 9: 'IGES_ARROW_2'.

Number of included entities = 1.

Subfigure name at D 13: 'IGES_ARROW_3'.

Number of included entities = 1.

Subfigure name at D 19: 'IGES_ARROW_4'.

Number of included entities = 2.

Subfigure name at D 23: 'IGES_ARROW_5'.

Number of included entities = 1.

Subfigure name at D 27: 'IGES_ARROW_6'.

Number of included entities = 1.

Subfigure name at D 33: 'IGES_ARROW_7'.

Number of included entities = 2.

Subfigure name at D 39: 'IGES_ARROW_8'.

Number of included entities = 2.

Subfigure name at D 43: 'IGES_ARROW_9'.

Number of included entities = 1.

*** Entity type: 404

Drawing at D 1171 contains 1 views.

Drawing at D 1171 contains 0 annotation entities.

*** Entity type: 406

*** Entity type: 410

Scale of view at D 1175 is 1.000000E+00.
Orthographic View entity at D 1175 has 0 clipping planes specified.

XMIN = Not Set	XMAX = Not Set
YMIN = Not Set	YMAX = Not Set
ZMIN = Not Set	ZMAX = Not Set

*** Message Summary ***

2015: 332 Mathematically incorrect definitions.

*** Error Summary ***

- 0 fatal errors
- 0 severe errors
- 118 errors
- 214 warnings
- 0 cautions
- 1 nitpicks
- 1 notes

*** End of Analysis of /novell/9320/igstst.igs ***

9.1.2 AutoCAD R12 Log File

Title: IGESIN Journal (v5.1 Nov 05 1992)

File: I:\9320\IGSTST.xli

Date: Mon, Mar 15, 1993

Time: 11:13:10

EVALUATION VERSION -- NOT FOR RESALE

Translator S/N: 117-10075750

Translating from IGES file: I:\9320\IGSTST.IGS
to AutoCAD Drawing: UNNAMED.dwg

Options obtained from: default settings

Curves Approximated to Tolerance of 0.01

Surfaces Approximated to Tolerance of 0.01

Text Font/Style mapping:

IGES Text font	Style Name	ACAD Font
0	SYMBOL0	iges0
1	STANDARD	txt
2	LEROY	txt
3	FUTURA	txt
6	COMP80	txt
12	GOTHICE	gothice
13	GOTHICI	gothici
14	ROMANS	romans
17	ROMANT	romant
18	ROMAND	romand
19	OCR	txt
1001	SYMBOL1	iges1001
1002	SYMBOL2	iges1002
1003	SYMBOL3	iges1003
2001	KANJI	bigfont

IGES Linefont/AutoCAD Linetype mapping

IGES Line Font	AutoCAD linetype	Shape file
0	BYLAYER	
1	CONTINUOUS	
2	DASHED	acad.lin
3	PHANTOM	acad.lin
4	CENTER	acad.lin

5

DOT

acad.lin

===== =
Parse phase

*** Warning (IAFP_LARGER_SGL_SIG) ***

IGSTST.IGS, line 9: IGES file has greater number of significant digits in single precision numbers than this system.

*** Warning (IAFP_LARGER_DBL_SIG) ***

IGSTST.IGS, line 9: IGES file has greater number of significant digits in double precision numbers than this system.

*** Warning (IEVM_RADII_NOT_EQUAL_100) ***

(DE 45, TF 100:0) Entity's radii are not equal. Start point radius: 2.5702948e+000. Terminate point radius: 2.5710842e+000.

Action taken: Start point moved 3.9469146e-004 units from 2.2463622e+000, 2.4423392e+000 to 2.2461671e+000, 2.4426823e+000. Terminate point moved 3.9469146e-004 units from 1.5065665e+000, 1.8106918e+000 to 1.5068751e+000, 1.8104458e+000.

<<<< PART OF Log FILE REMOVED HERE >>>>

*** Warning (IEVM_BAD_START_POINT_104) ***

(DE 227, TF 104:1) Entity's start point not on the conic. Value found was 2.8370570e-001, 3.5463300e-002.

Action taken: Start point moved 3.6393207e-003 units, from 2.8370570e-001, 3.5463300e-002 to 2.8734502e-001, 3.5463300e-002.

<<<< PART OF Log FILE REMOVED HERE >>>>

*** Warning (IEVM_BAD_END_POINT_104) ***

(DE 355, TF 104:1) Entity's End Point not on the conic. Value found was -7.0926700e-002, 6.5015800e-002.

Action taken: End point moved 1.4451297e-003 units, from -7.0926700e-002, 6.5015800e-002 to -7.0926700e-002, 6.6460930e-002.

===== =
Start Section:

InterCAP Graphics Systems, Inc.

MIL-D-28000 Conformance to Class I - Technical Illustrations Subset

Destination System : unknown

Destination Company: Texas_Instruments

Sending Company : Texas_Instruments

Contact Person : Tommy_Smith

Global Section:

Parameter Delimiter: ,
Record Delimiter: ;
Sending Product ID: IGES_CALS
File Name: igstst.igs
System ID: InterCAP Graphics Systems - V7.8103
Preprocessor Version: IGES VERSION 4.0
Size of Integer: 16
Sgl. Precision Mag: 8
Sgl. Precision Sig: 24
Dbl. Precision Mag: 8
Dbl. Precision Sig: 56
Receiving Product ID: IGES_CALS V78
Model Space Scale: 1.000000
Unit Flag: 1
Unit String: INCH
of Line Weights: 20
Maximum Line Width: 0.133320
Creation Date: 03/02/93 12:02:29
Minimum Resolution: 0.000100
Maximum Coordinate: 11.000000
Author:
Organization: InterCAP Graphics Systems
IGES Version Number: 6
Drafting Standard: 0

Entity Summary:

Type	Form	Description	Count
100	0	Circular Arc	128
104	1	Ellipse	122
106	11	Planar Piecewise Linear Curve	24
110	0	Line	176
124	0	Transformation Matrix	122
212	0	General Note (Simple)	1
230	0	Section Area (Standard Fill)	3
308	0	Subfigure Definition	9
404	0	Drawing (form 0)	1
406	16	Property (Drawing Size)	1
410	0	View	1
Total			588

Translation phase

Drawing Entity (404 Form 0) at DE 1171, with

name = ,
size = 11.000000, 8.500000,
units = IN,

was processed in the AutoCAD drawing file: C:\UNNAMED.dwg

*** Warning (ACAD_NEW_VIEW_VOLUME_GENERATED) ***
(DE: 1175 TF: 410:0)

A new view volume has been generated for the view with:

XMIN (-1.390144), XMAX (12.390144),
YMIN (-1.390144), YMAX (9.890144),
ZMIN (-1.390144), ZMAX (1.390144).

IGES Entity Summary

Type	Form	Description	Count	Processed	Errors
100	0	Circular Arc	130	130	0
104	1	Ellipse	122	122	0
106	11	Planar Piecewise Linear Curve	26	26	0
110	0	Line	176	176	0
212	0	General Note (Simple)	1	1	0
230	0	Section Area (Standard Fill)	3	3	0
308	0	Subfigure Definition	9	9	0
404	0	Drawing (form 0)	1	1	0
406	16	Property (Drawing Size)	1	1	0
410	0	View	1	1	0
Totals			470	470	0

AutoCAD Entity Summary

Entity	Created	Errors
LINE	240	0
CIRCLE	3	0
TEXT	1	0
ARC	126	0
SOLID	2	0
INSERT	1	0
POLYLINE	91	0
BLOCK	10	0
Totals	474	0

Error Summary:

The following message was issued 1 time(s)
IGES file has greater number of significant digits in single precision numbers
than this system.

The following message was issued 1 time(s)
IGES file has greater number of significant digits in double precision numbers
than this system.

The following message was issued 119 time(s)
Entity's radii are not equal. Start point radius: %.7e. Terminate point
radius: %.7e.

The following message was issued 109 time(s)
Entity's start point not on the conic. Value found was %.7e, %.7e.

The following message was issued 109 time(s)
Entity's End Point not on the conic. Value found was %.7e, %.7e.

The following message was issued 1 time(s)
A new view volume has been generated for the view with:
XMIN (%lf), XMAX (%lf),
YMIN (%lf), YMAX (%lf),
ZMIN (%lf), ZMAX (%lf).

Status: 0
Warning: 340
Error: 0
Fatal: 0

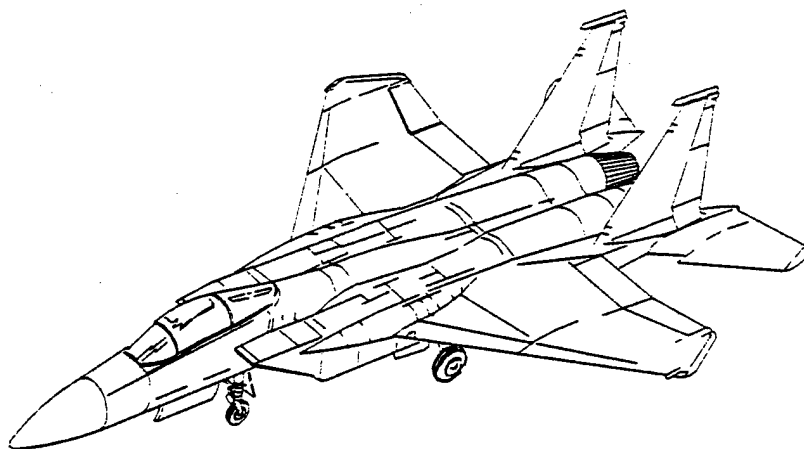
Elapsed Time:

Processor: 00:00:30
Clock: 00:00:30

=====

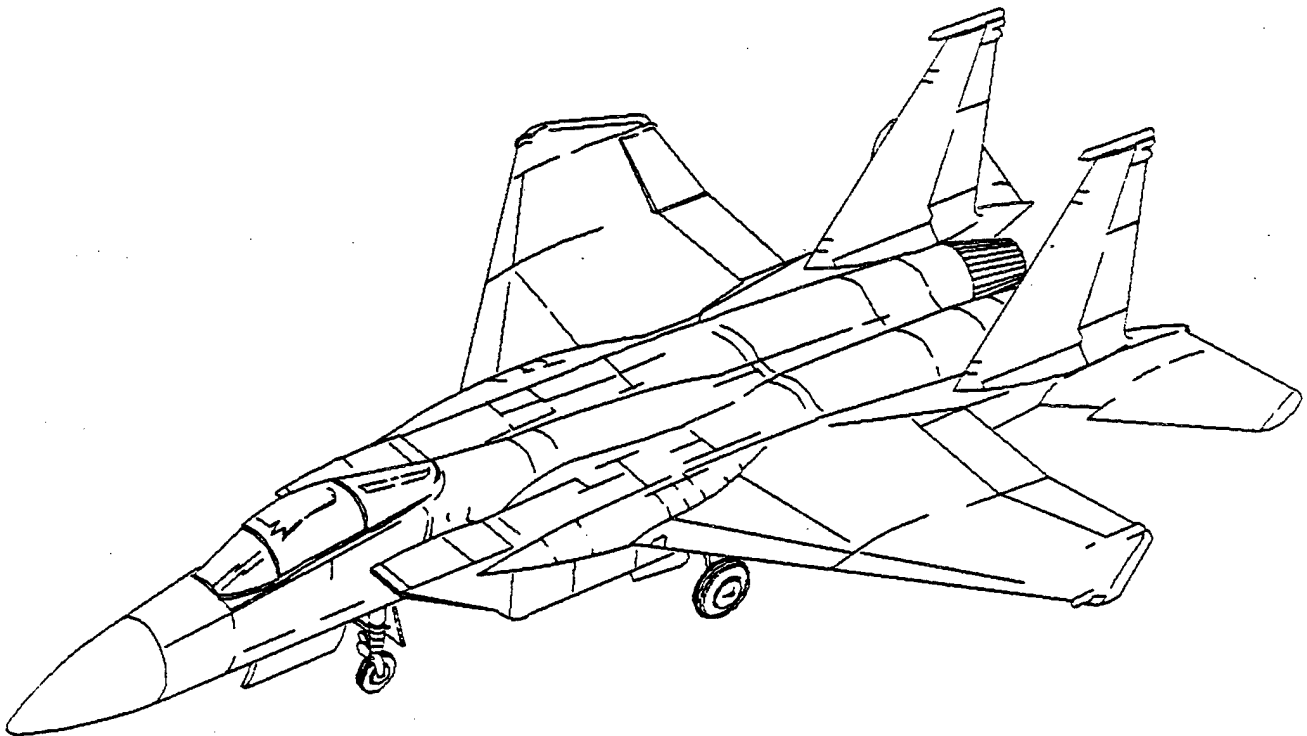
9.1.3 Output AutoCAD R12

Illustrator 2 version 7.8



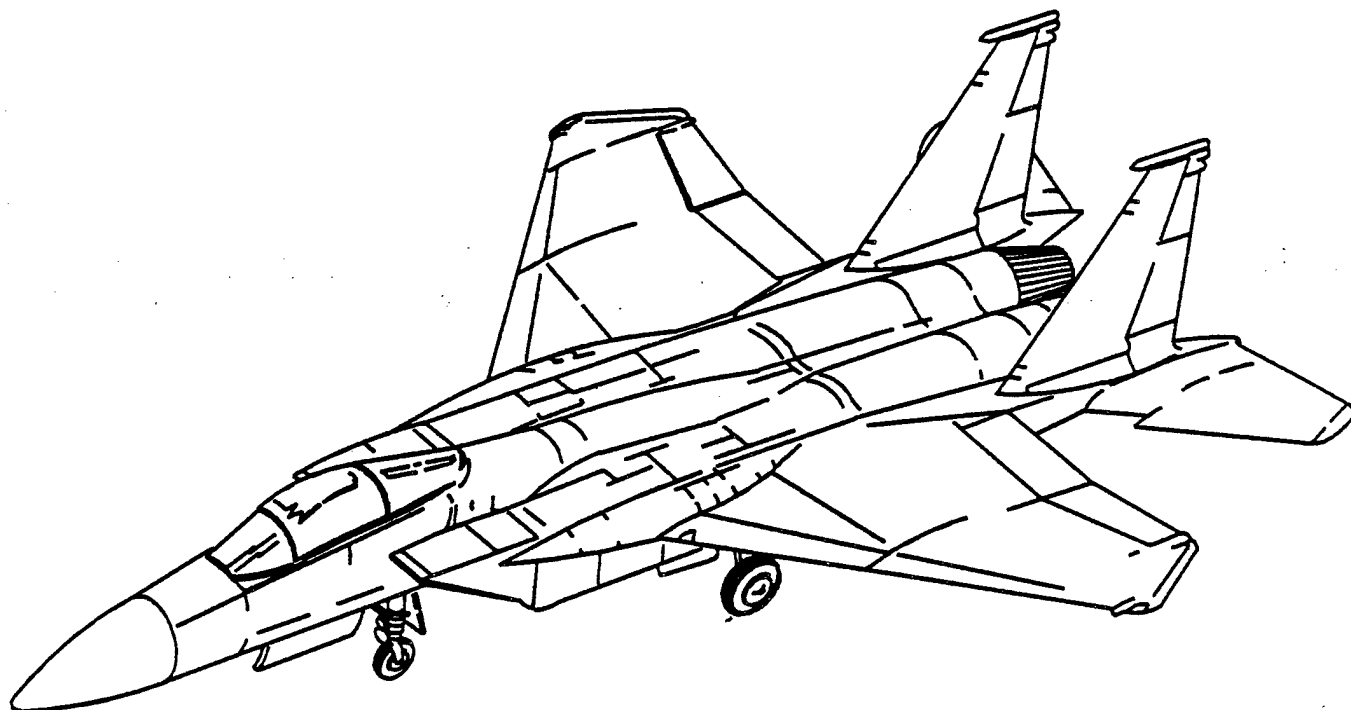
9.1.4 Output Cadkey v5.02

Illustrator 2 version 7.8



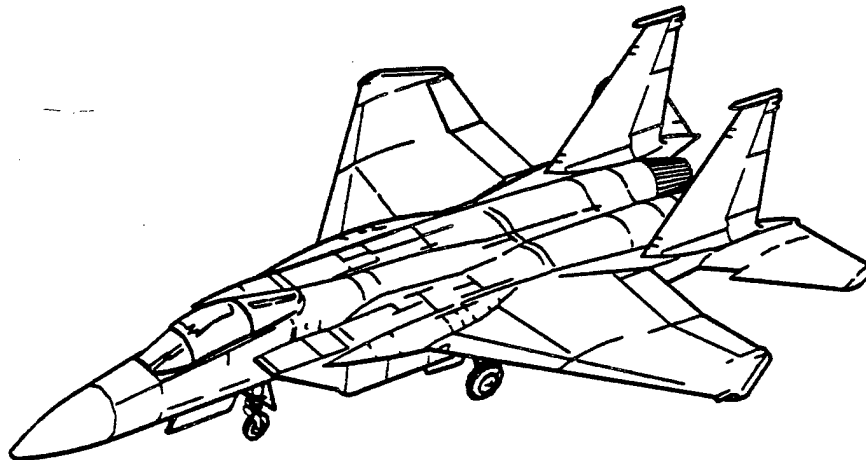
9.1.5 Output CheckMark v1.00

ILLUSTRATOR 2 VERSION 7.8



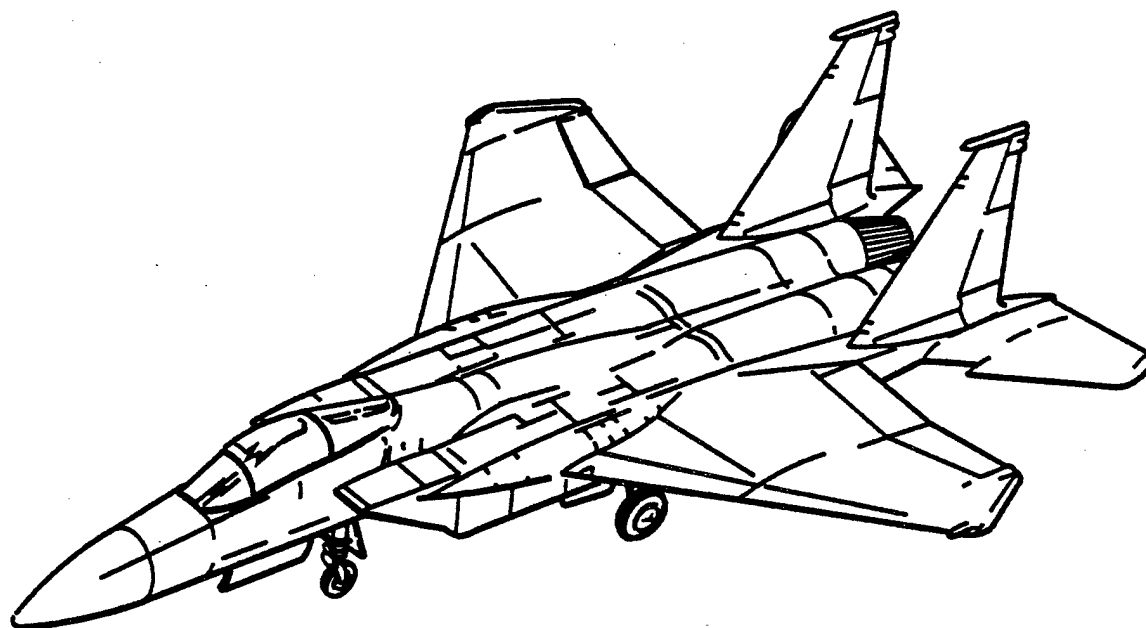
9.1.6 Output IGESView

Illustrator 2 version 7.8



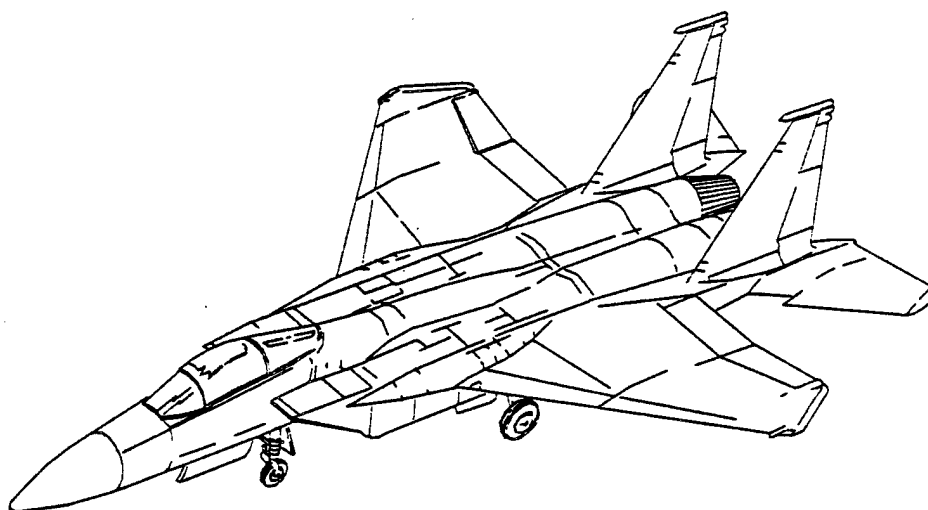
9.1.7 Output iges2draw/IslandDraw

Illustrator 2 version 7.8



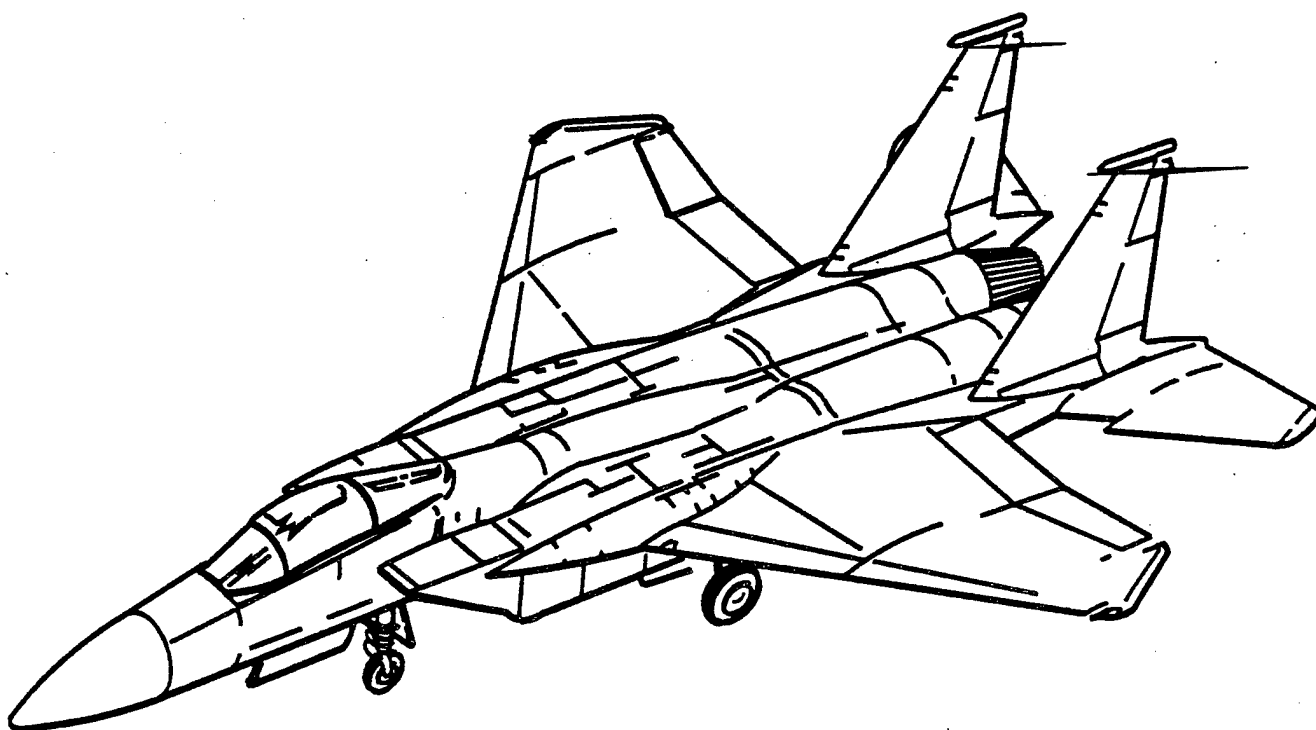
9.1.8 Output IGESWorks

Illustrator 2 version 7.8



9.1.9 Output Preview

Illustrator 2 version 7.8



10. Appendix B - Detailed CGM Analysis

10.1 File SAMP1

10.1.1 Parser Log MetaCheck

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:42:39

Metafile Examined : i:\9320\samp1.cgm

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

Bulletin 20027: Element Class/ID: 4/1 Offset: 512 octets Element No. 38
Warning; a foreground color has been defined and referenced by a primitive,
while the background color has not been defined.

===== CALS CGM Profile (MIL-D-28003) Report =====

No profile discrepancies detected.

===== Conformance Summary Report =====

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:42:45

Name of CGM under test: i:\9320\samp1.cgm
Encoding : Binary

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

BEGIN METAFILE string : "HiJaak 2"
METAFILE DESCRIPTION : "HiJaak 2 MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 336; string contains: "Awesome!"

Conformance Summary : This file conforms to the CGM specification.

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested
2213 Elements Tested
26722 Octets Tested

0 Illegal CGM Elements	1000 -	1999
0 Incorrect CGM Element Lengths	2000 -	2999
0 CGM State Errors	3000 -	3499
0 Required CGM Elements Missing or Wrong	4000 -	4499
0 CGM Parameter Values Out of Range	6000 -	6499
0 CGM Structure Errors	7000 -	7499
0 *** CGM Errors Found (total) ***		

0 Profile State Errors	3500 -	3999
0 Illegal Profile Elements	4500 -	4999
0 Profile Parameter Values Out of Range	6500 -	6999
0 Profile Data Limits Exceeded	8500 -	8999
0 Other Profile Constraints Violated	9500 -	9999
0 *** Profile Violations Found (total) ***		

1 Warnings (Advisory Remarks)	20000 -	20999
-------------------------------	---------	-------

1 distinct errors and warnings were reported.

===== End of Conformance Report =====

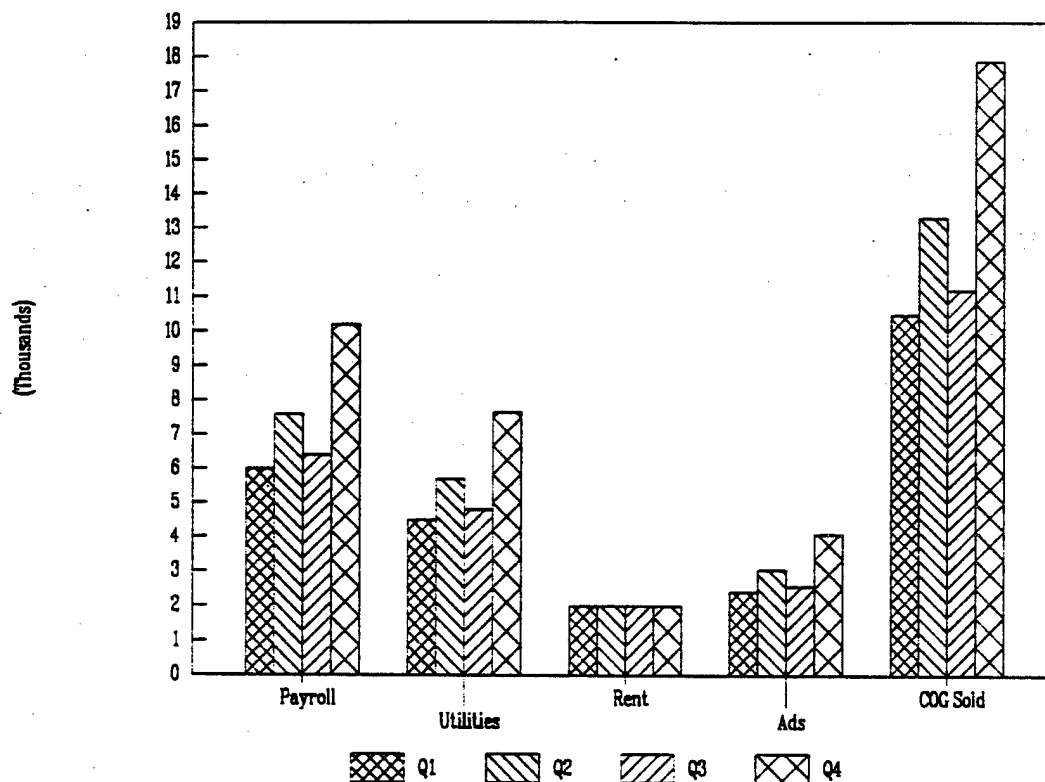
10.1.2 validcgm Log

Analysis for file sampl.cgm using table table

(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 1 time
(2, 7) never occurred, required by standard B
(3, 1) occurred 1 time
(4, 1) occurred 857 times
(5, 3) occurred 162 times
(5, 4) occurred 162 times
(5, 8) occurred 162 times
(5, 14) occurred 162 times
(5, 15) occurred 5 times
(5, 16) occurred 32 times
(5, 22) occurred 2 times
(5, 23) occurred 324 times
(5, 28) occurred 162 times
(5, 29) occurred 162 times
(5, 30) occurred 1 time

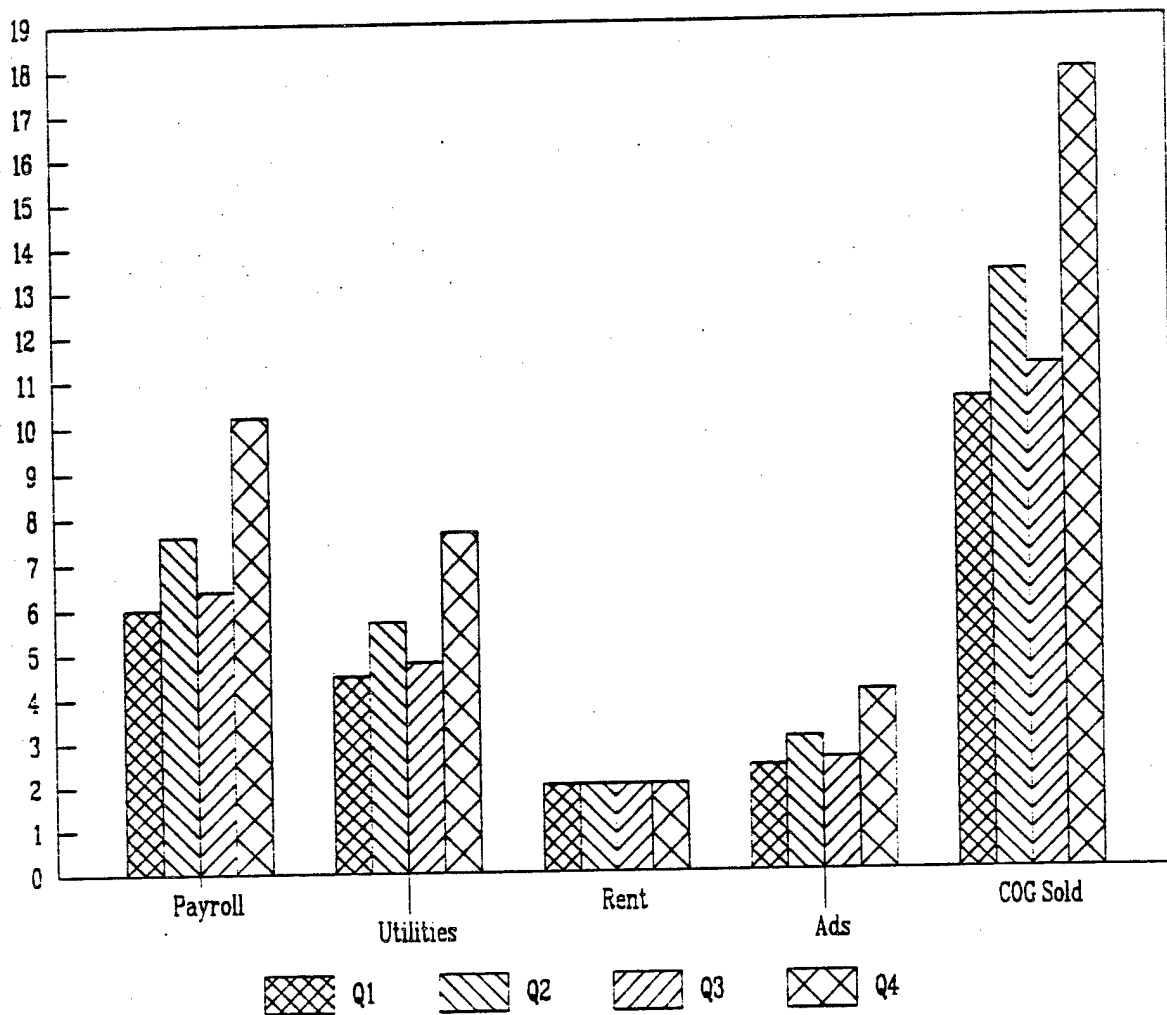
10.1.3 Output XSoft cgm2ps

LOTUS 1-2-3 sample .PIC file
version 2.4



10.1.4 Output cgm2draw/IslandDraw

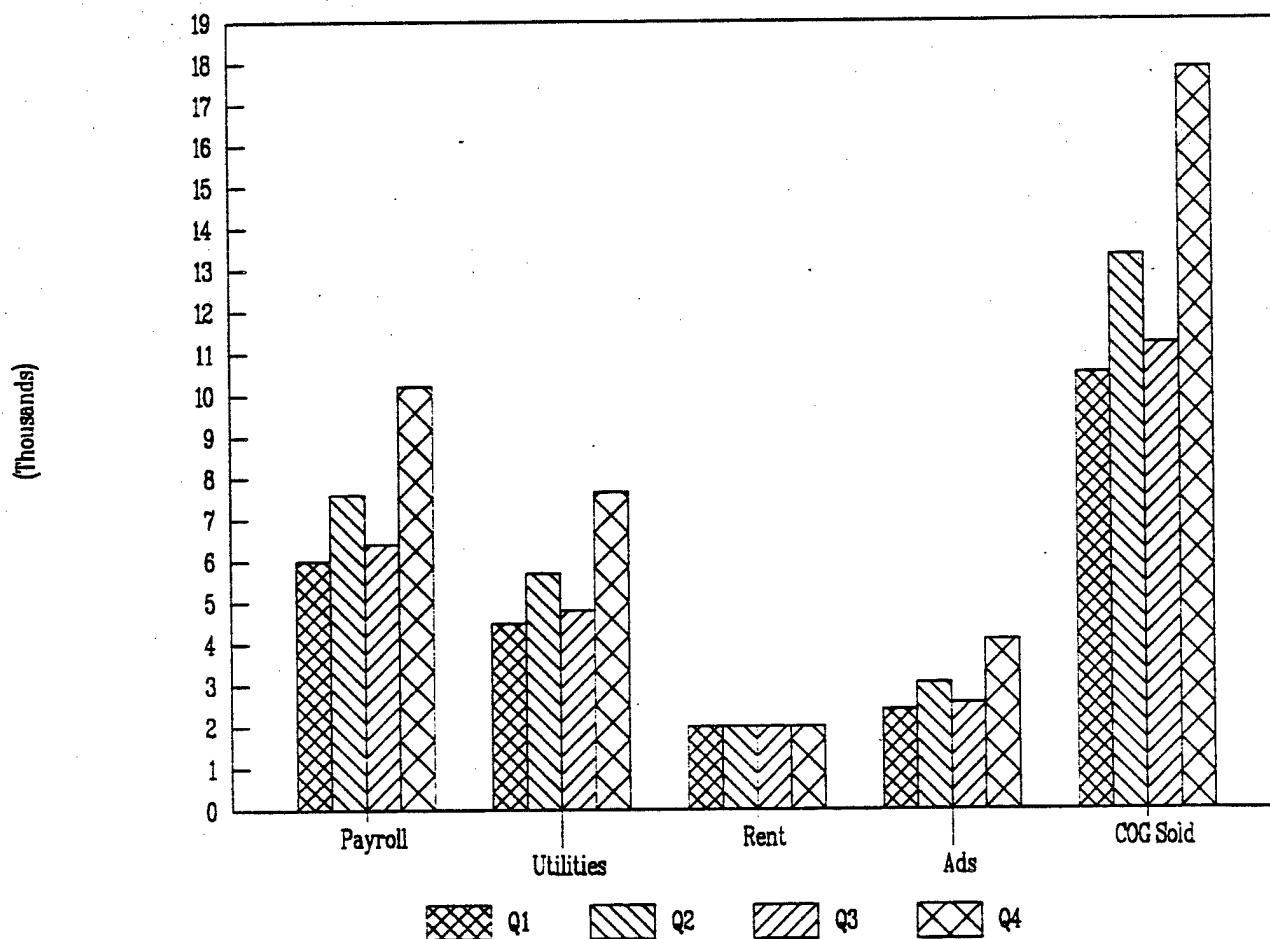
LOTUS 1-2-3 sample .PIC file
version 24



10.1.5 Output CADLeaf

LOTUS 1-2-3 sample .PIC file

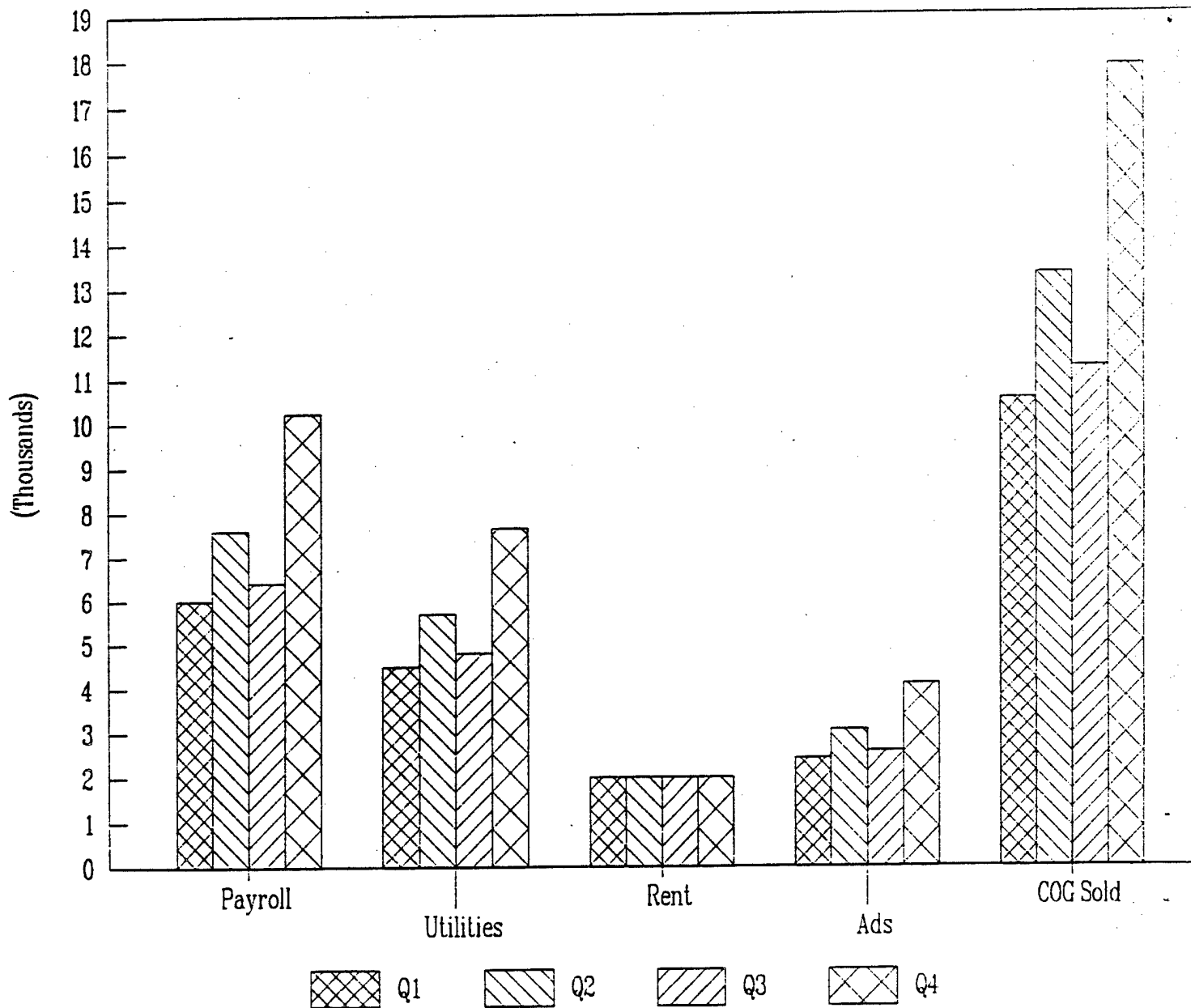
version 2.4



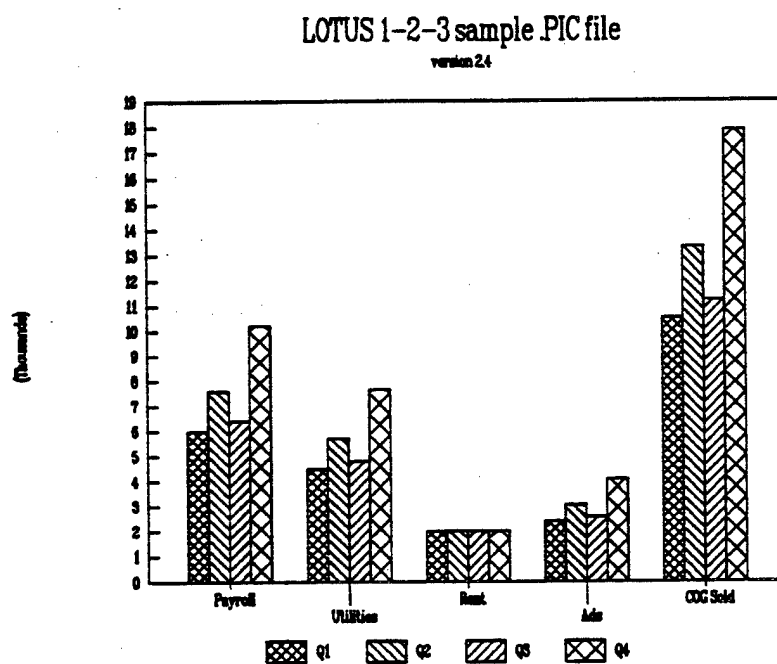
10.1.6 Output Designer

LOTUS 1-2-3 sample .PIC file

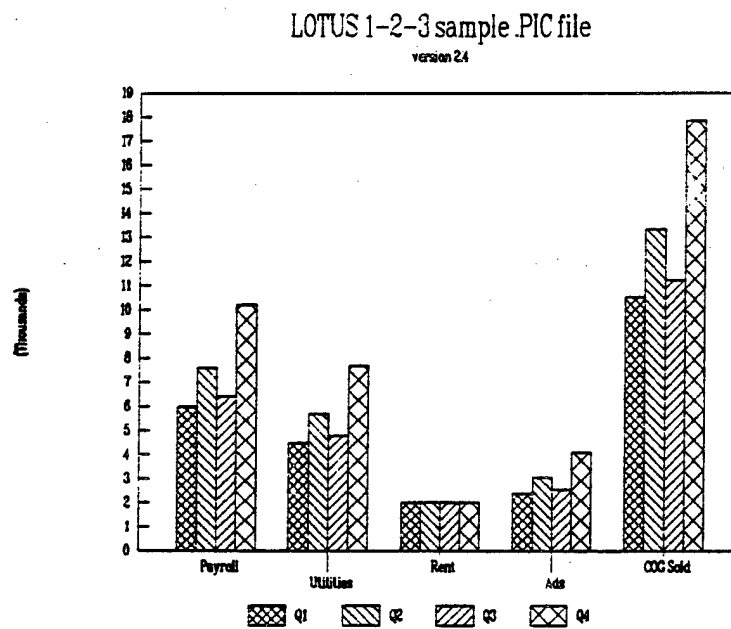
version 2.4



10.1.7 Output Harvard Graphics

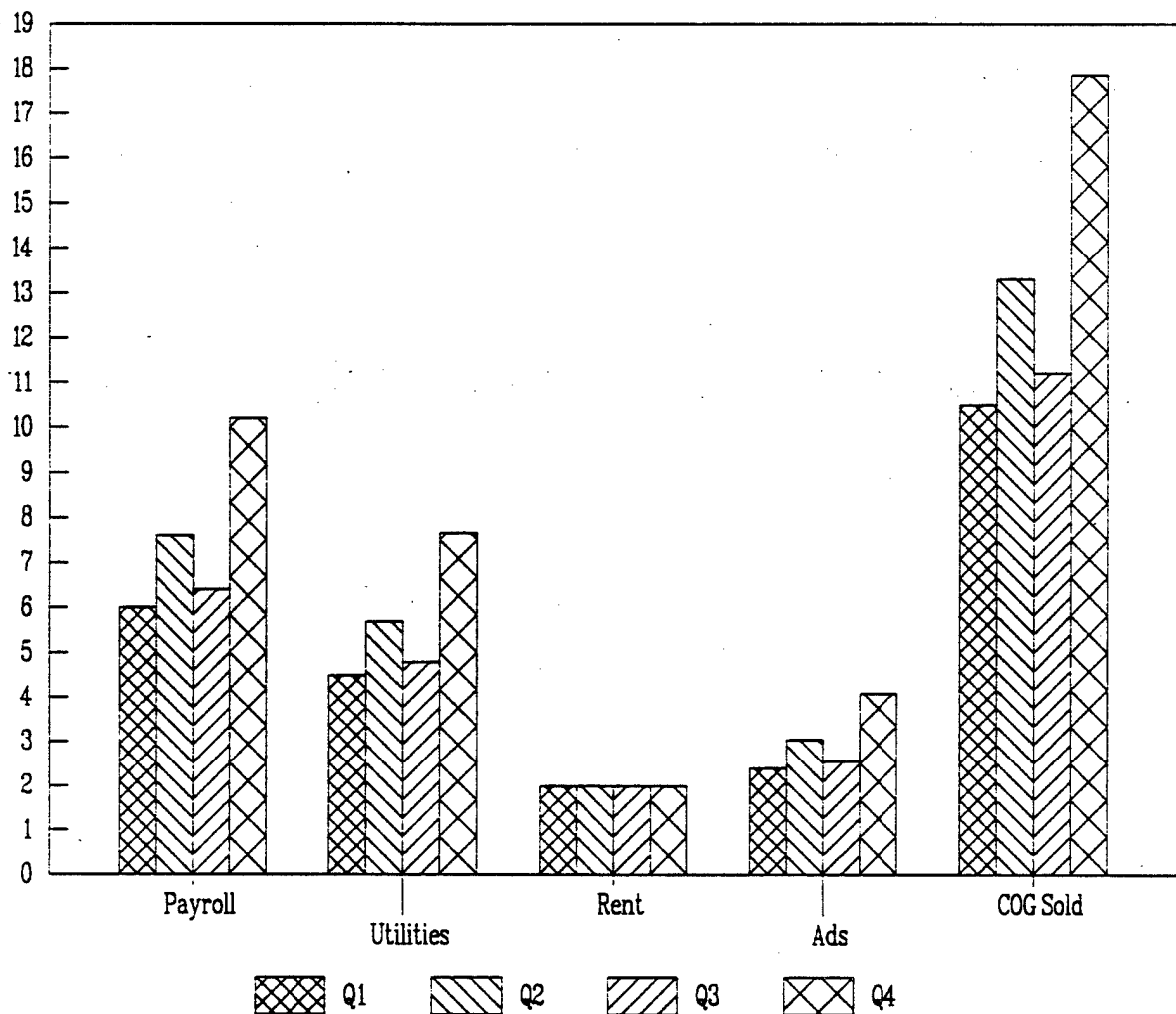


10.1.8 Output HiJaak Windows



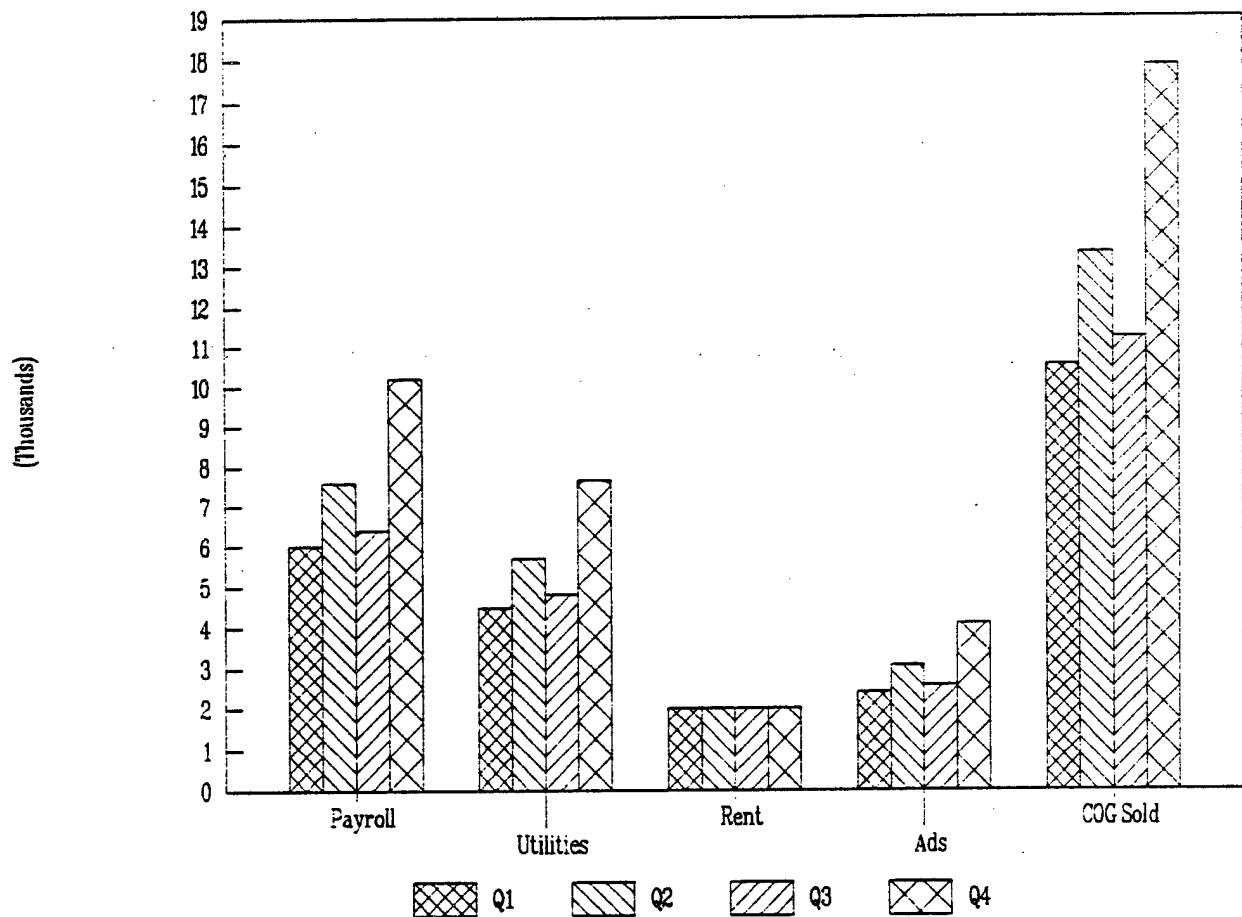
10.1.9 Output IslandDraw

version 2.4



10.1.10 Output Ventura Publisher

LOTUS 1-2-3 sample .PIC file
version 2.4



10.2 File SAMP2

10.2.1 Parser Log MetaCheck

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:42:53

Metafile Examined : i:\9320\samp2.cgm

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

Bulletin 20027: Element Class/ID: 4/1 Offset: 526 octets Element No. 40
Warning; a foreground color has been defined and referenced by a primitive,
while the background color has not been defined.

===== CALS CGM Profile (MIL-D-28003) Report =====

No profile discrepancies detected.

===== Conformance Summary Report =====

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:42:57

Name of CGM under test: i:\9320\samp2.cgm
Encoding : Binary

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

BEGIN METAFILE string : "HiJaak 2"
METAFILE DESCRIPTION : "HiJaak 2 MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 336; string contains: "Awesome!"

Conformance Summary : This file conforms to the CGM specification.

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested
597 Elements Tested
13158 Octets Tested

0 Illegal CGM Elements	1000 -	1999
0 Incorrect CGM Element Lengths	2000 -	2999
0 CGM State Errors	3000 -	3499
0 Required CGM Elements Missing or Wrong	4000 -	4499
0 CGM Parameter Values Out of Range	6000 -	6499
0 CGM Structure Errors	7000 -	7499
0 *** CGM Errors Found (total) ***		
0 Profile State Errors	3500 -	3999
0 Illegal Profile Elements	4500 -	4999
0 Profile Parameter Values Out of Range	6500 -	6999
0 Profile Data Limits Exceeded	8500 -	8999
0 Other Profile Constraints Violated	9500 -	9999
0 *** Profile Violations Found (total) ***		
1 Warnings (Advisory Remarks)	20000 -	20999

1 distinct errors and warnings were reported.

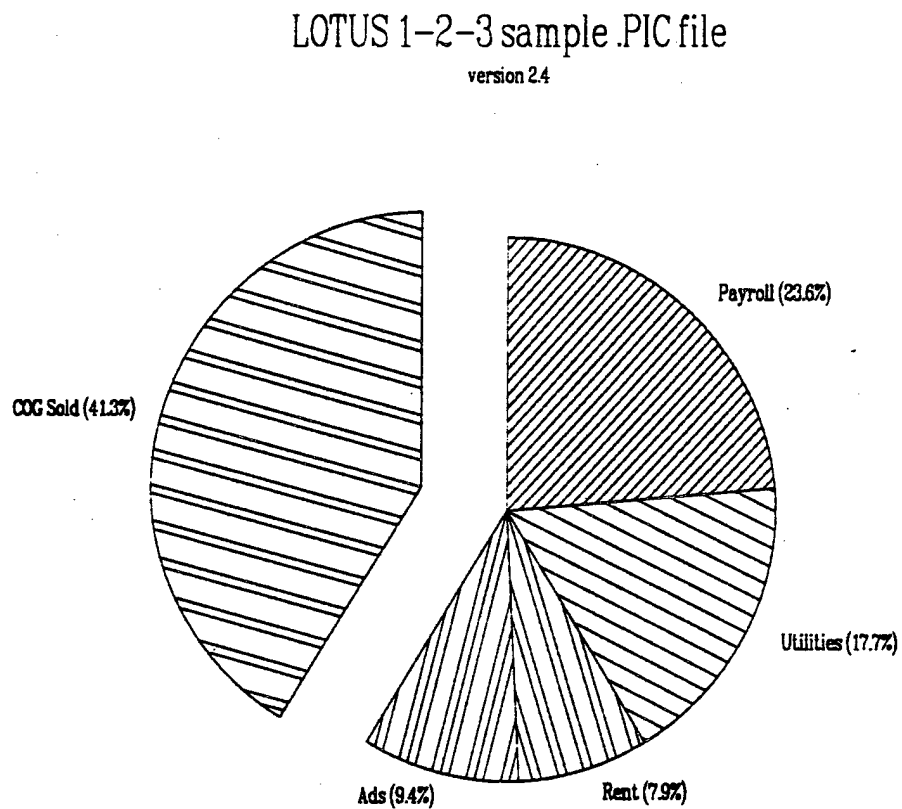
===== End of Conformance Report =====

10.2.2 validcgm Log

Analysis for file samp2.cgm using table table

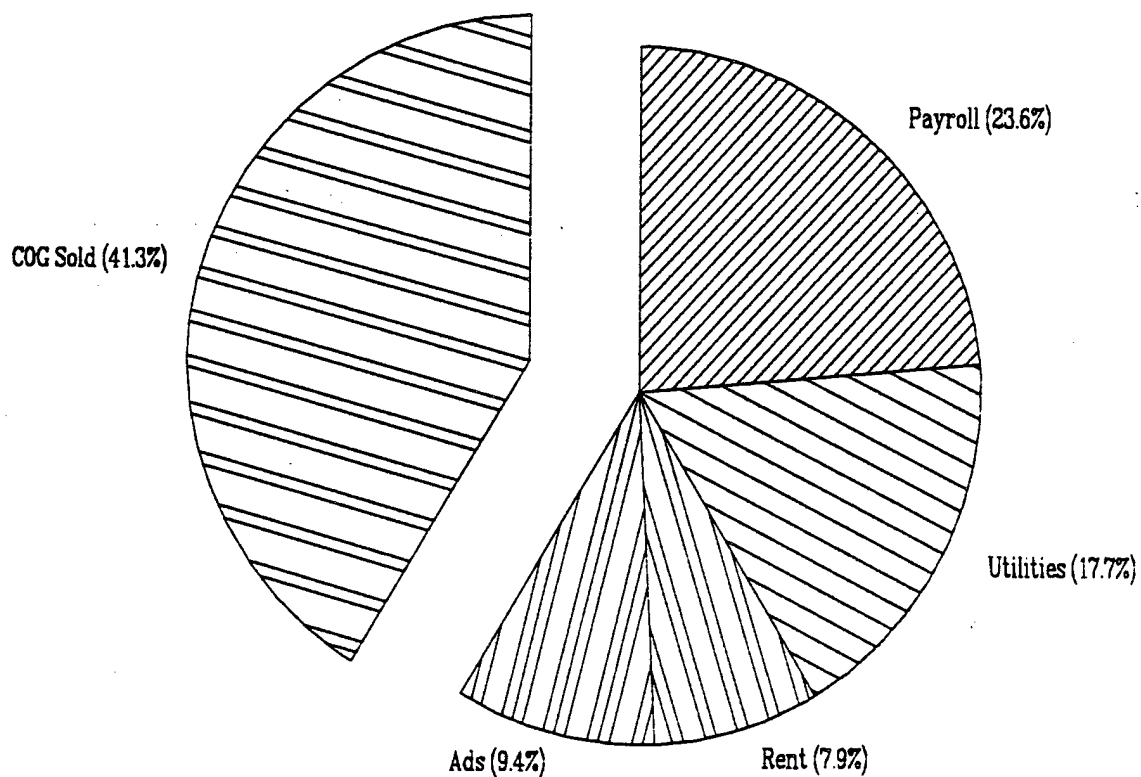
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 1 time
(2, 7) never occurred, required by standard B
(3, 1) occurred 1 time
(4, 1) occurred 428 times
(5, 3) occurred 17 times
(5, 4) occurred 17 times
(5, 8) occurred 17 times
(5, 14) occurred 17 times
(5, 15) occurred 3 times
(5, 16) occurred 7 times
(5, 22) occurred 2 times
(5, 23) occurred 34 times
(5, 28) occurred 17 times
(5, 29) occurred 17 times
(5, 30) occurred 1 time

10.2.3 Output XSoft cgm2ps



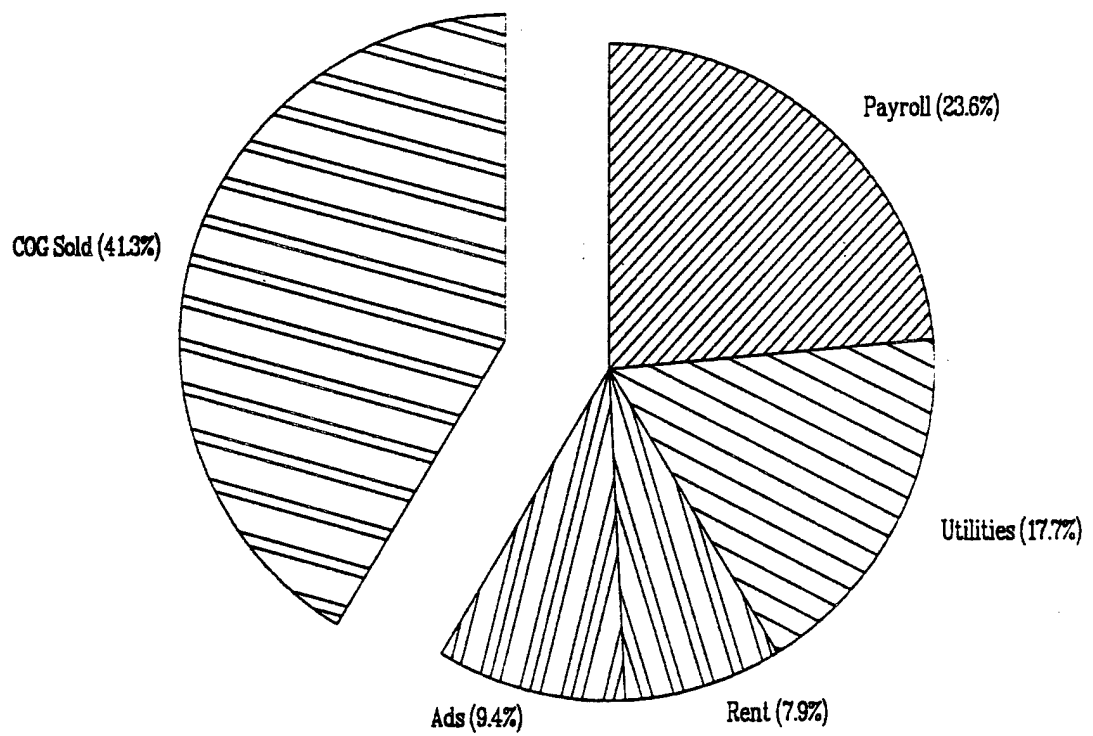
10.2.4 Output cgm2draw/IslandDraw

LOTUS 1-2-3 sample .PIC file
version 2.4



10.2.5 Output CADLeaf

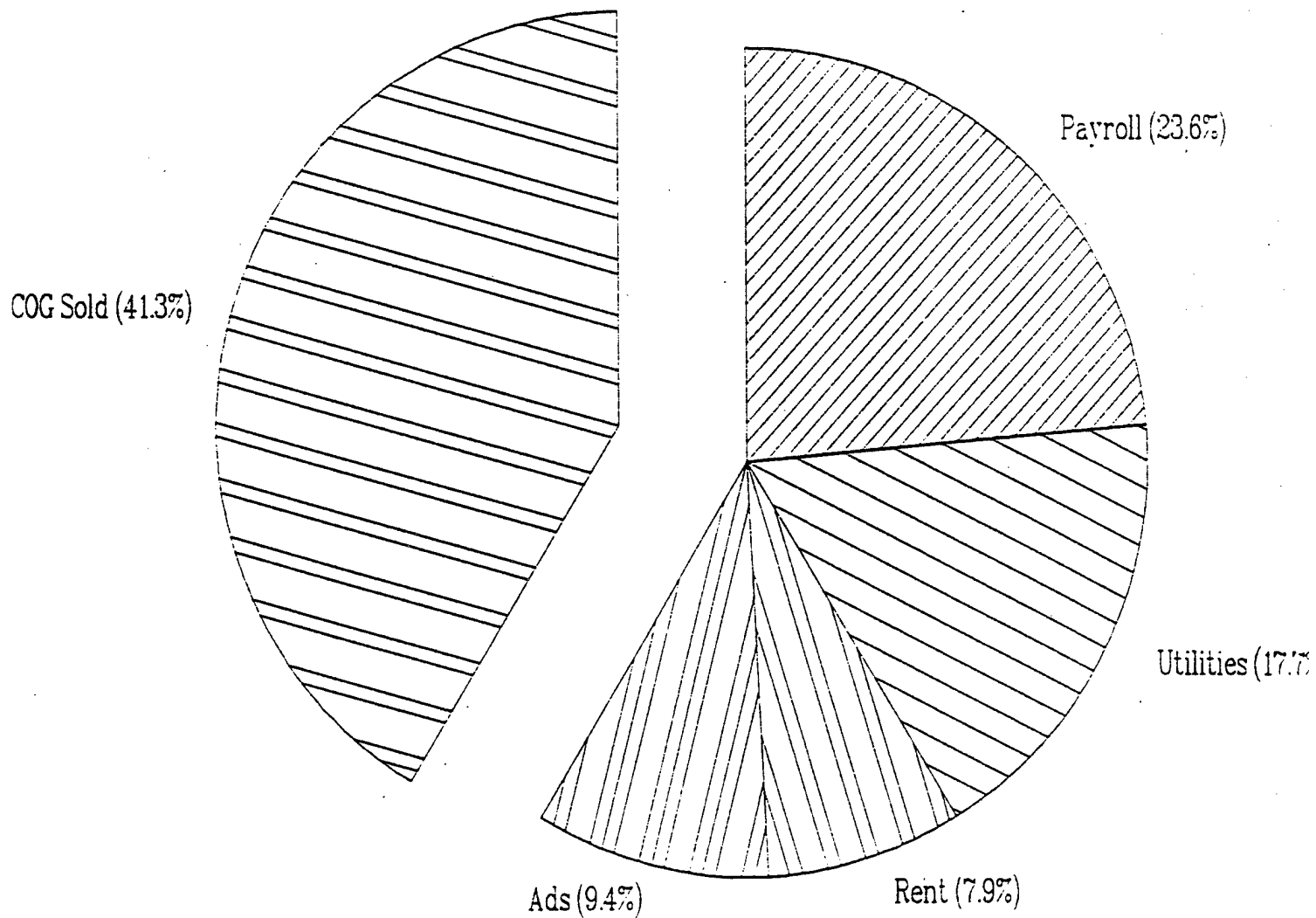
LOTUS 1-2-3 sample .PIC file
version 2.4



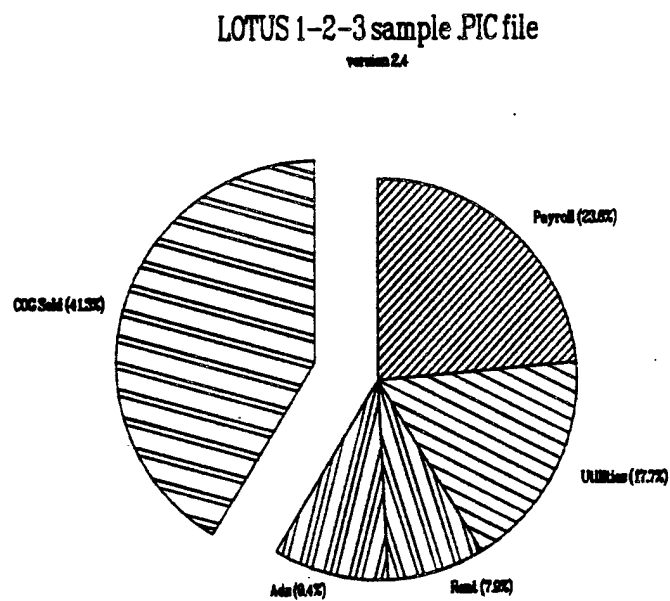
10.2.6 Output Designer

LOTUS 1-2-3 sample .PIC file

version 2.4

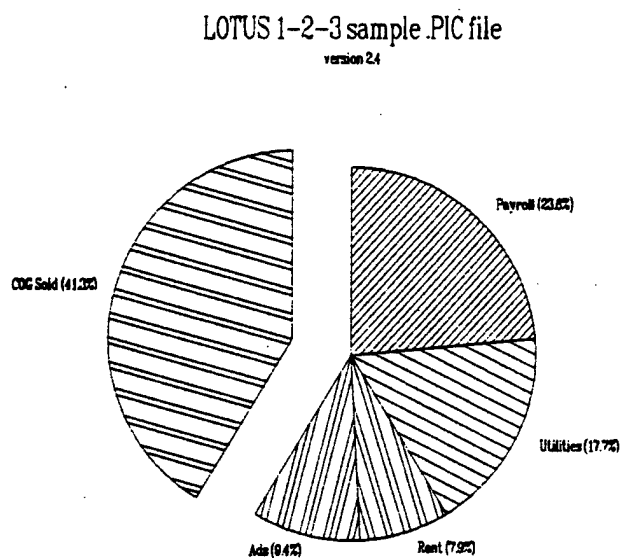


10.2.7 Output Harvard Graphics



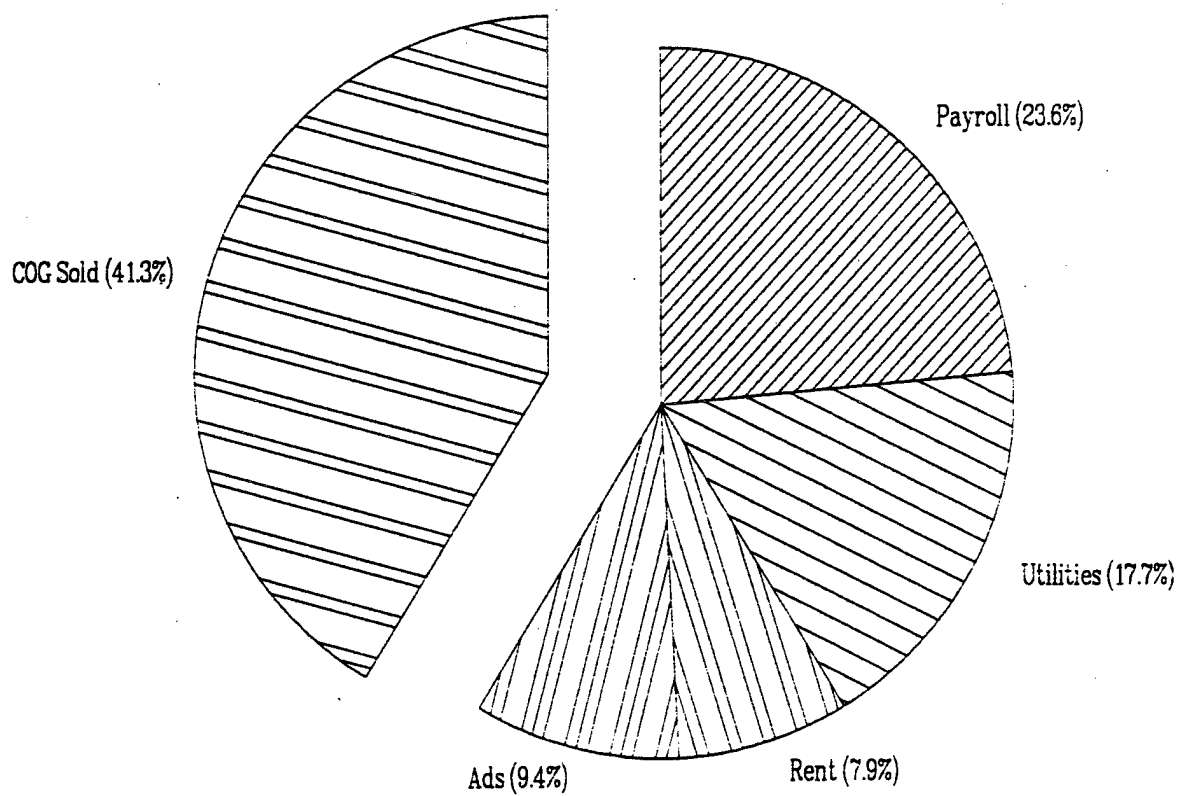
9320 - HG305 - SAMP2

10.2.8 Output HiJaak Windows



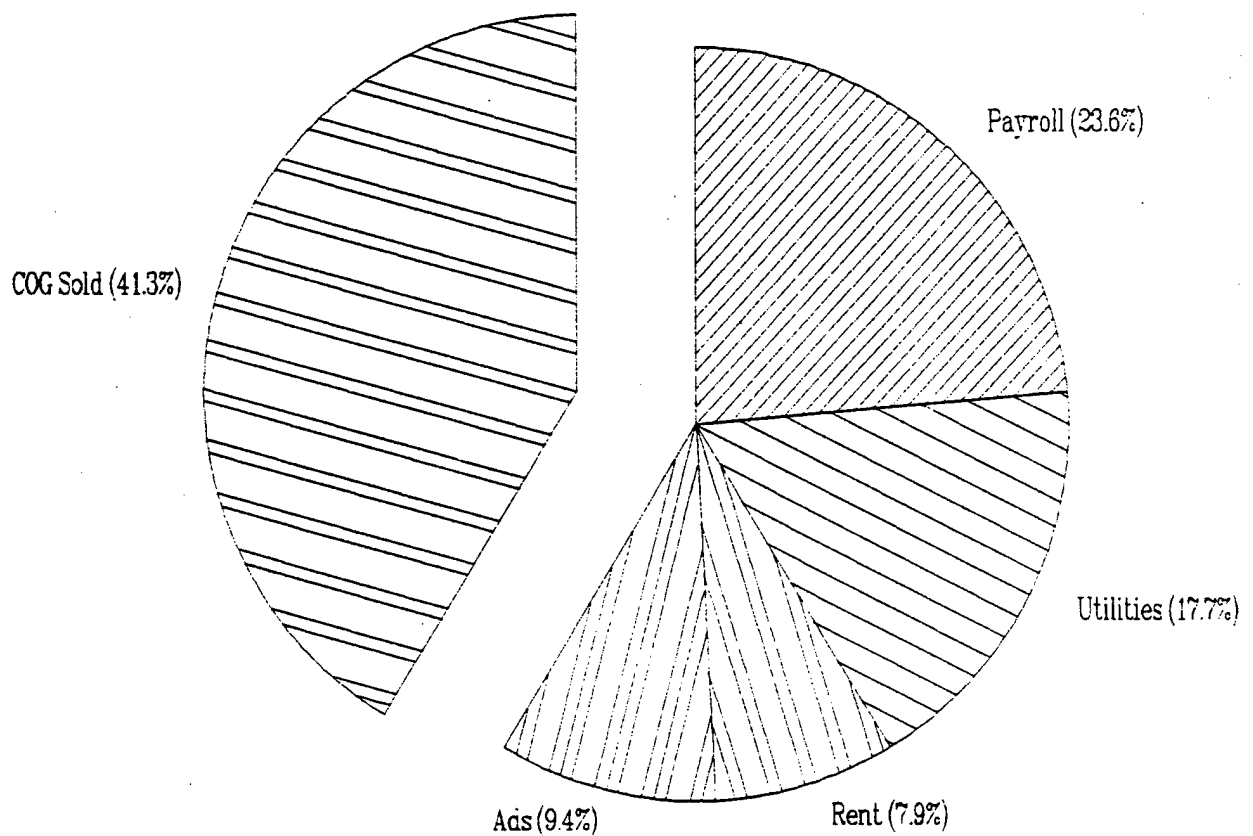
10.2.9 Output IslandDraw

version 2.4



10.2.10 Output Ventura Publisher

LOTUS 1-2-3 sample .PIC file
version 2.4



10.3 File ticgm04

10.3.1 Parser Log MetaCheck

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:43:28

Metafile Examined : i:\9320\ticgm04.cgm

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

No Errors Detected

===== CALS CGM Profile (MIL-D-28003) Report =====

No profile discrepancies detected.

===== Conformance Summary Report =====

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:43:32

Name of CGM under test: i:\9320\ticgm04.cgm
Encoding : Binary

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

BEGIN METAFILE string : "Micrografx CGM Translator, version 3.9 (T.I.
Beta)"

METAFILE DESCRIPTION : "MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 128; string contains: "1"

Conformance Summary : This file conforms to the CGM specification.

AFCTN Test Report
94-040

AFCTB Test Report
93-020

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested
1111 Elements Tested
15120 Octets Tested

=====
| No Errors Were Detected |
=====

===== End of Conformance Report =====

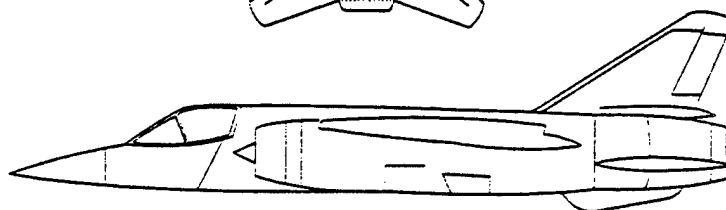
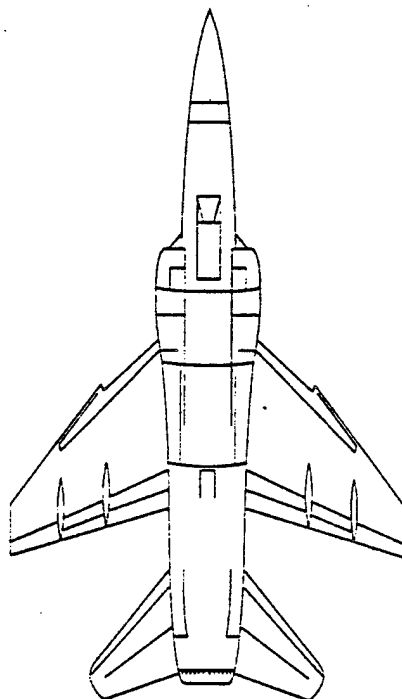
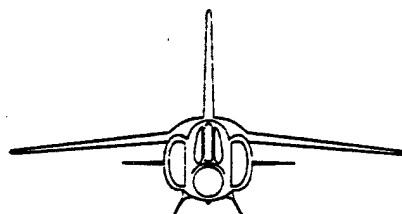
10.3.2 validcgm Log

Analysis for file ticgm04.cgm using table table

(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 1) occurred 1 time
(3, 3) occurred 116 times
(3, 4) occurred 3 times
(4, 1) occurred 210 times
(4, 4) occurred 7 times
(4, 17) occurred 1 time
(4, 18) occurred 2 times
(5, 2) occurred 1 time
(5, 3) occurred 310 times
(5, 4) occurred 1 time
(5, 14) occurred 1 time
(5, 15) occurred 1 time
(5, 16) occurred 6 times
(5, 18) occurred 1 time
(5, 23) occurred 116 times
(5, 27) occurred 1 time
(5, 28) occurred 310 times
(5, 29) occurred 1 time
(5, 30) occurred 2 times

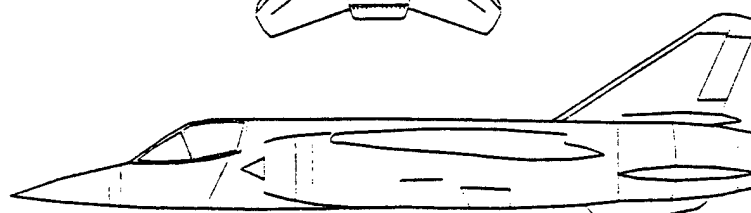
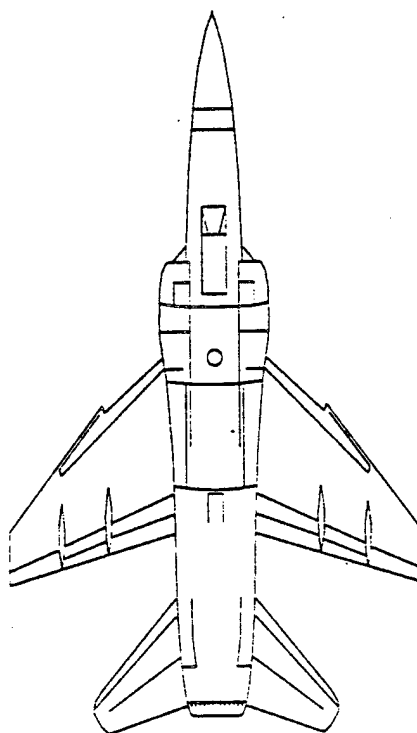
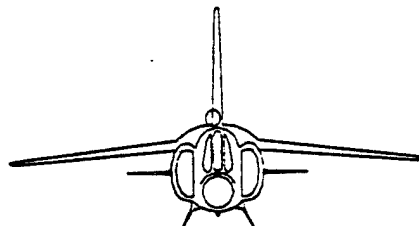
10.3.3 Output XSoft cgm2ps

M I H R
H I H R
K O O H
C O O H
K O O H



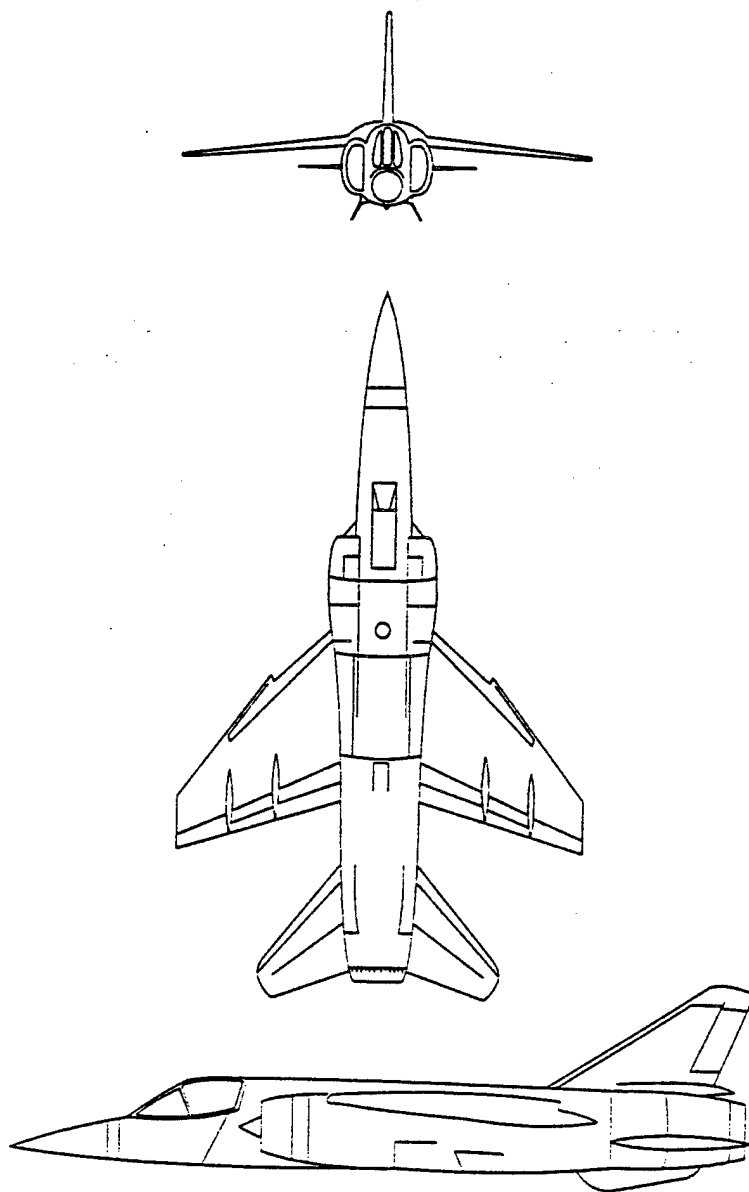
10.3.4 Output cgm2draw/IslandDraw

MIRAC
HITLER
SOUTHER
Version
Conversion
Data



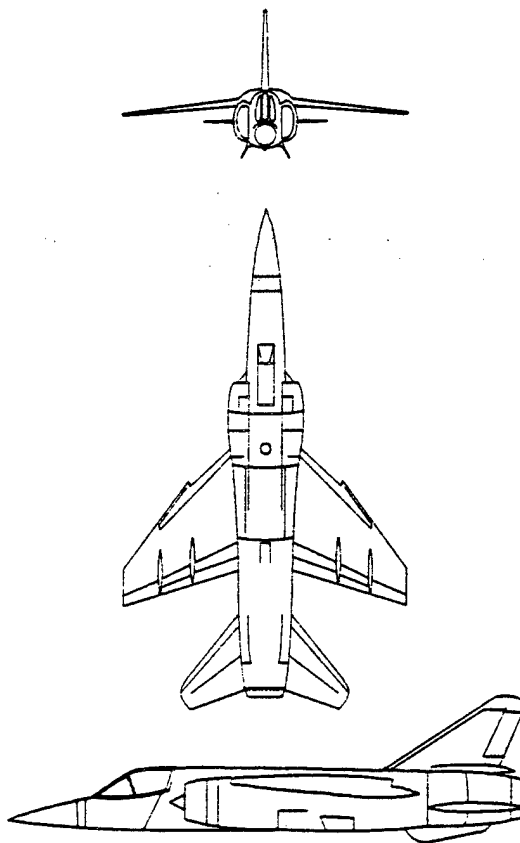
10.3.5 Output CADLeaf

MIRAGE F-1 CLIPART
FILE NAME: TICGM04.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



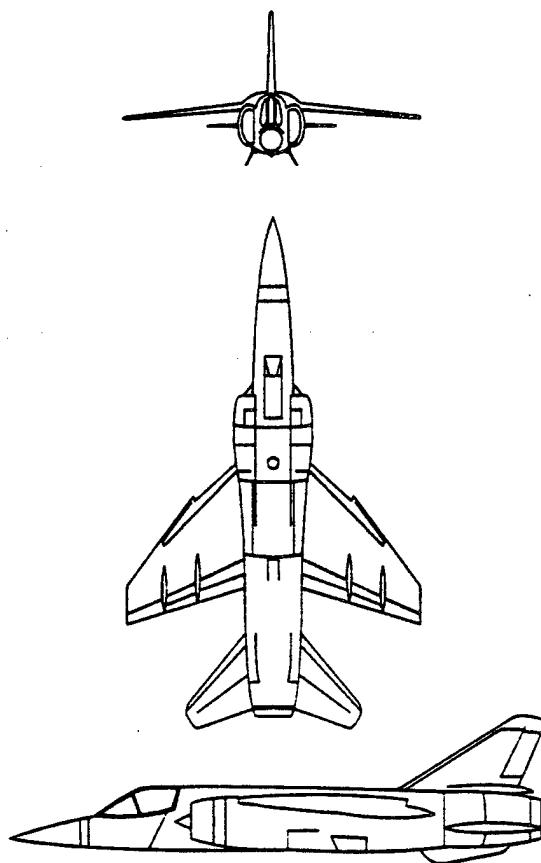
10.3.6 Output Designer

MIRAGE F-1 CLIPART
FILE NAME: TICGM04.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



10.3.7 Output Harvard Graphics

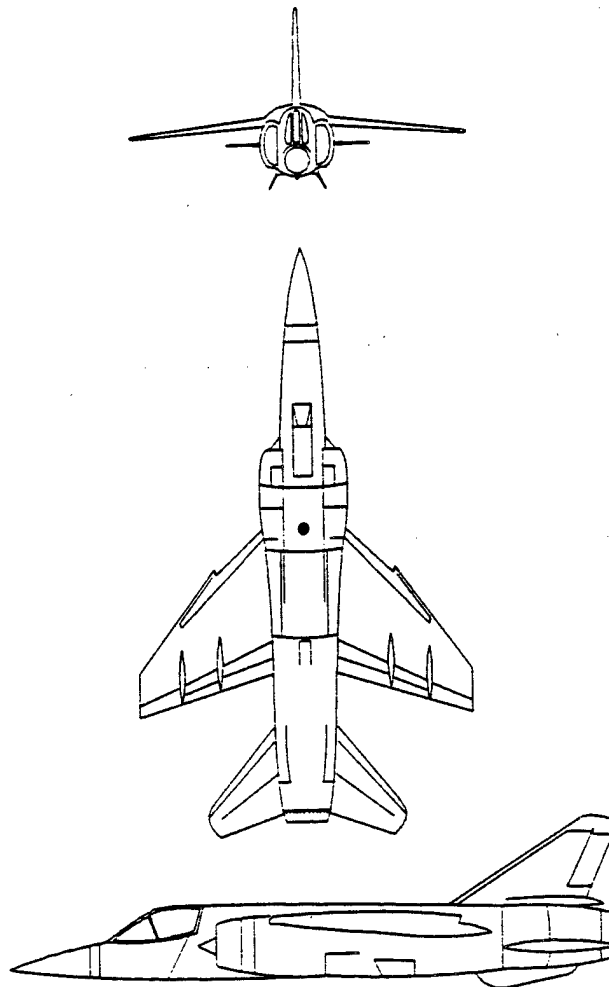
MIRAGE F-1 CLIPART
FILE NAME: TICGM04.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



9320 - HG305 - ticgm04

10.3.8 Output HiJaak Windows

MIRAGE F-1 CLIPART
FILE NAME: TICGM04.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



10.3.9 Output IslandDraw

FILE NAME: TICGM04.CGM

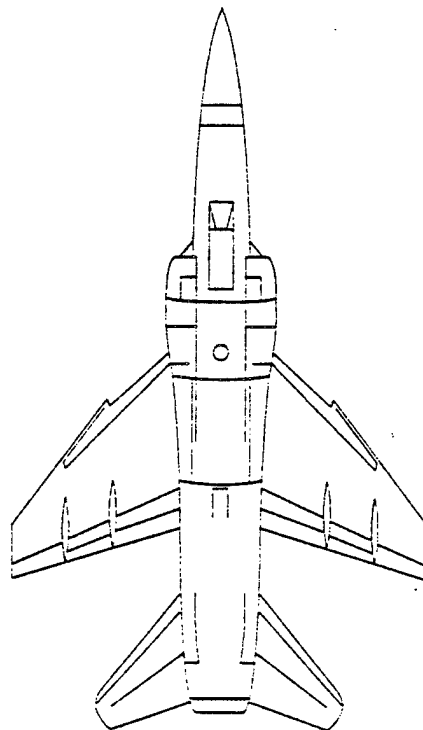
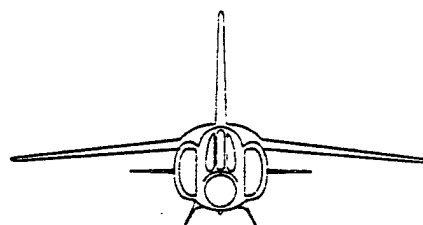
SOURCE: CHARISMA

Version: 2.1

Converter: CGMTI

Version: 3.9 (BETA)

Date: 07 December 1992



10.3.10 Output Ventura Publisher

MIRAGE F-1 CLIPART

FILE NAME: TICGM04.CGM

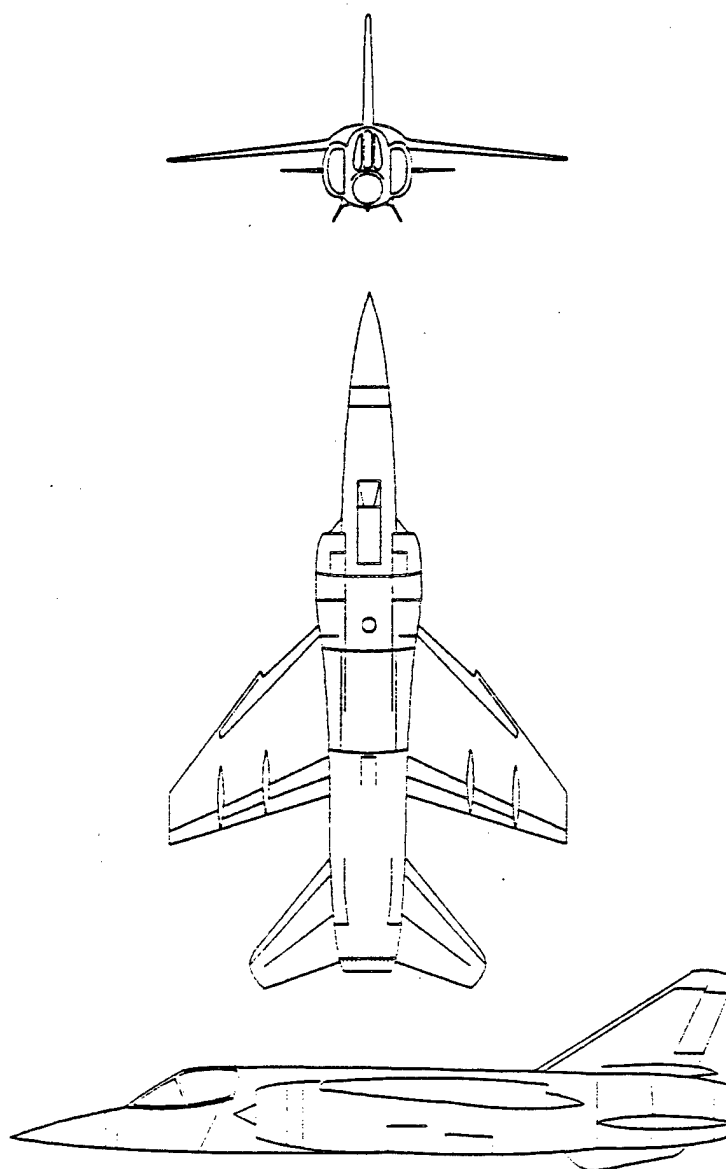
SOURCE: CHARISMA

Version: 2.1

Converter: CGMTI

Version: 3.9 (BETA)

Date: 07 December 1992



10.4 File ticgm05

10.4.1 Parser Log MetaCheck

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:43:40

Metafile Examined : i:\9320\ticgm05.cgm

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

No Errors Detected

===== CALS CGM Profile (MIL-D-28003) Report =====

No profile discrepancies detected.

===== Conformance Summary Report =====

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 03/15/93 Time: 10:43:44

Name of CGM under test: i:\9320\ticgm05.cgm
Encoding : Binary

Pictures Examined : All
Elements Examined : All
Bytes Examined : All

BEGIN METAFILE string : "Micrografx CGM Translator, version 3.9 (T.I.
Beta)"

METAFILE DESCRIPTION : "MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 128; string contains: "1"

Conformance Summary : This file conforms to the CGM specification.
This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested
1198 Elements Tested
17102 Octets Tested

=====
| No Errors Were Detected |
=====

===== End of Conformance Report =====

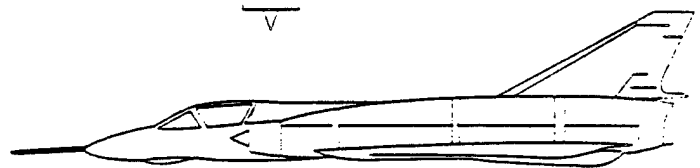
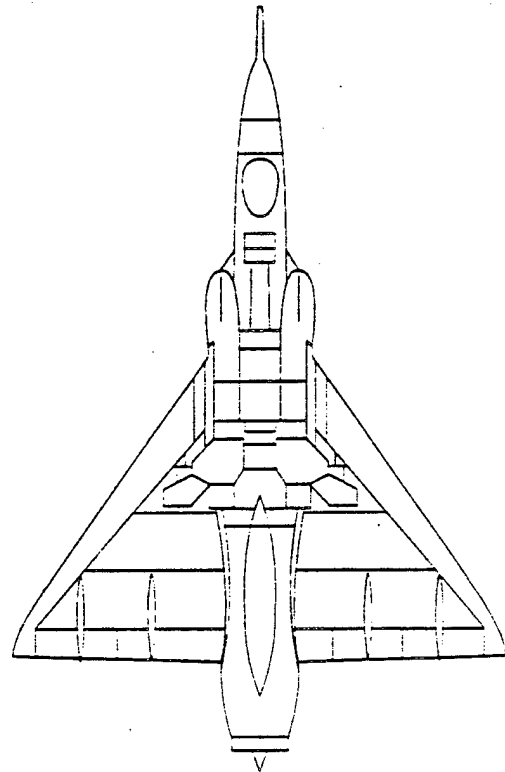
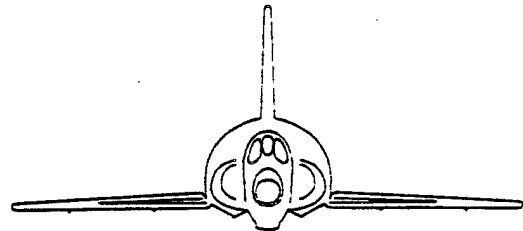
10.4.2 validcgm Log

Analysis for file ticgm05.cgm using table table

(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 1) occurred 1 time
(3, 3) occurred 140 times
(3, 4) occurred 2 times
(4, 1) occurred 232 times
(4, 4) occurred 7 times
(4, 17) occurred 1 time
(5, 2) occurred 1 time
(5, 3) occurred 324 times
(5, 4) occurred 1 time
(5, 14) occurred 1 time
(5, 15) occurred 1 time
(5, 16) occurred 6 times
(5, 18) occurred 1 time
(5, 22) occurred 2 times
(5, 23) occurred 128 times
(5, 27) occurred 1 time
(5, 28) occurred 324 times
(5, 29) occurred 1 time
(5, 30) occurred 4 times

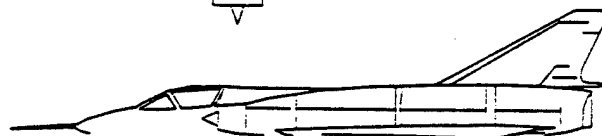
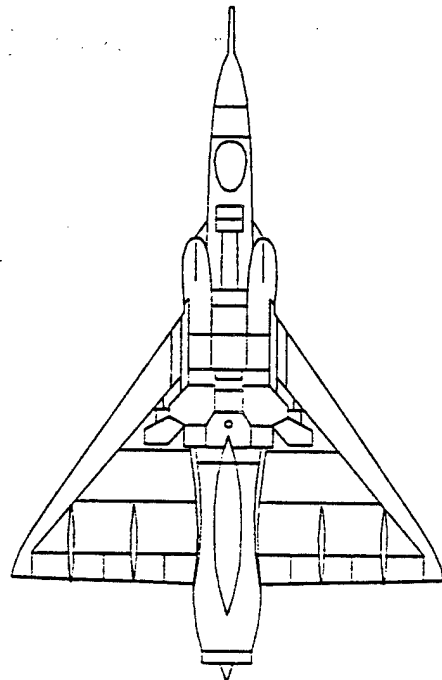
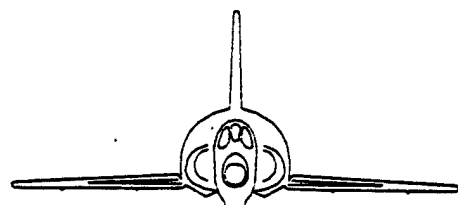
10.4.3 Output XSoft cgm2ps

M H H
H H H
K O O H
K O O H
H O O



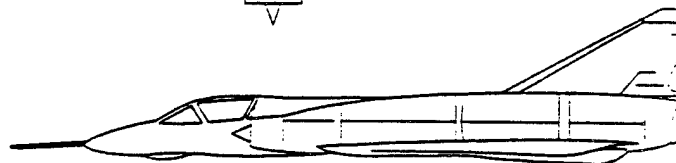
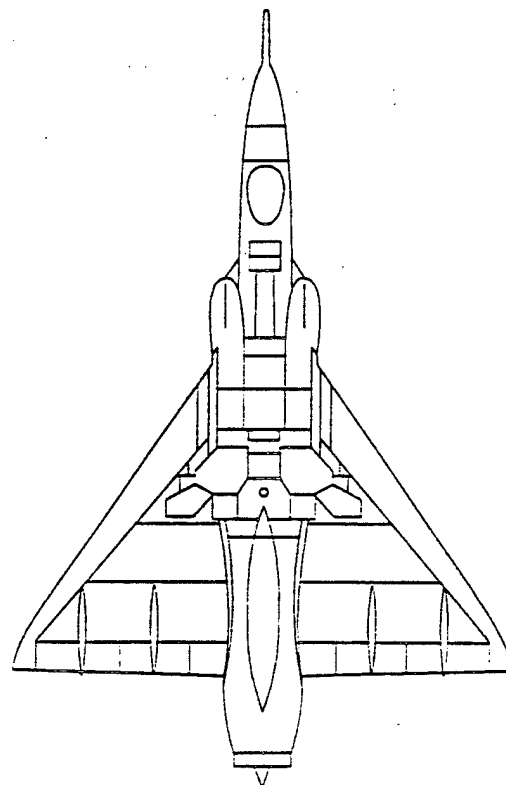
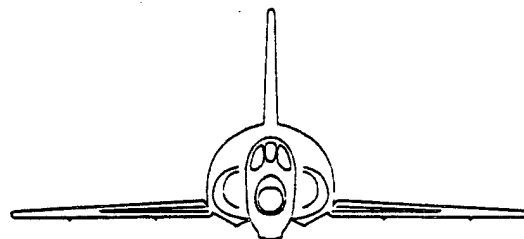
10.4.4 Output cgm2draw/IslandDraw

Version 1.0



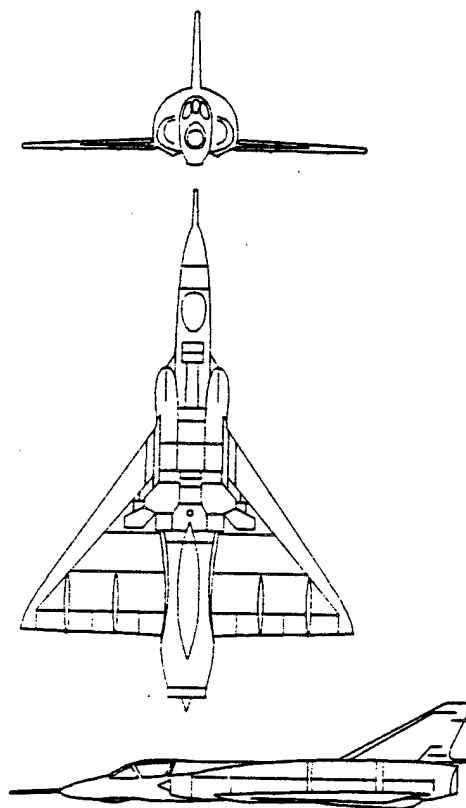
10.4.5 Output CADLeaf

MIRAGE III CLIPART
FILE NAME: TICGM05.CGM
SOURCE: CHARISMA.
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



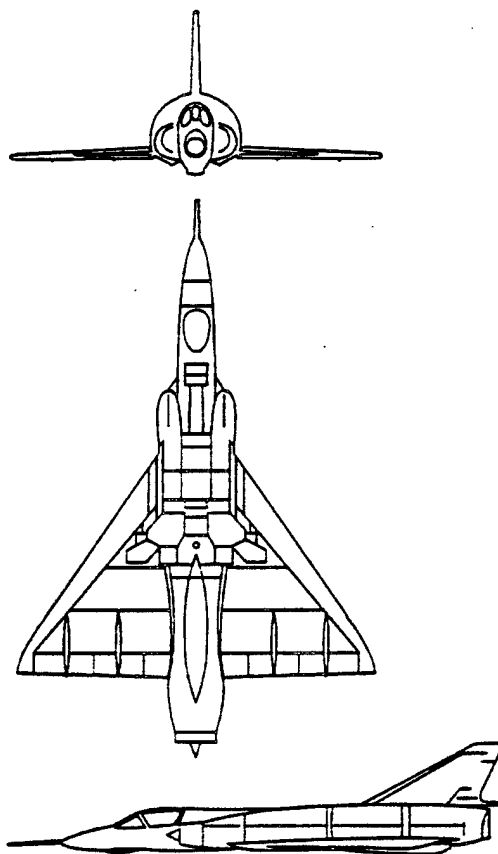
10.4.6 Output Designer

MIRAGE III CLIPART
FILE NAME: TICGM05.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



10.4.7 Output Harvard Graphics

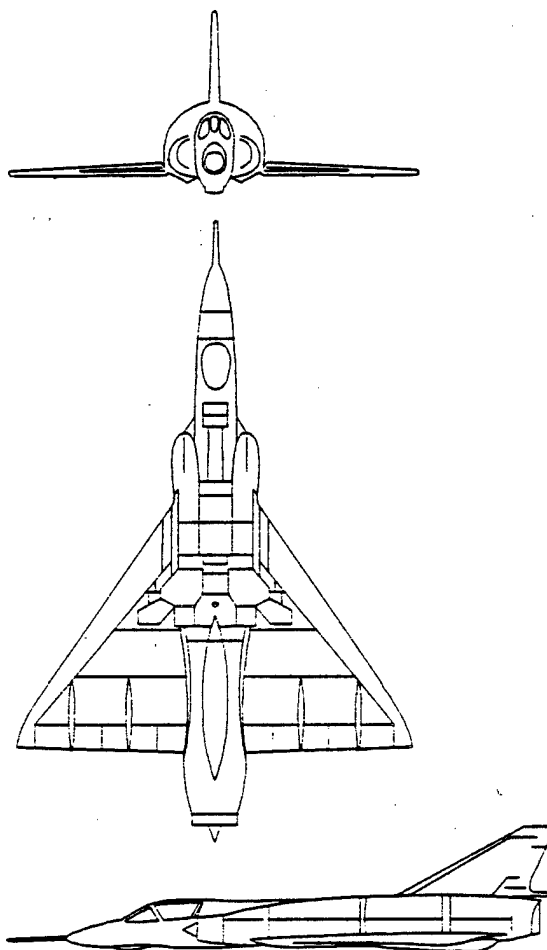
MIRAGE III CLIPART
FILE NAME: TICGM05.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



9320 - HG305 - ticgm05

10.4.8 Output HiJaak Windows

MIRAGE III CLIPART
FILE NAME: TICGM05.CGM
SOURCE: CHARISMA
Version: 2.1
Converter: CGMTI
Version: 3.9 (BETA)
Date: 07 December 1992



10.4.9 Output IslandDraw

LE INAVIE: IICGIMUD.CGMI

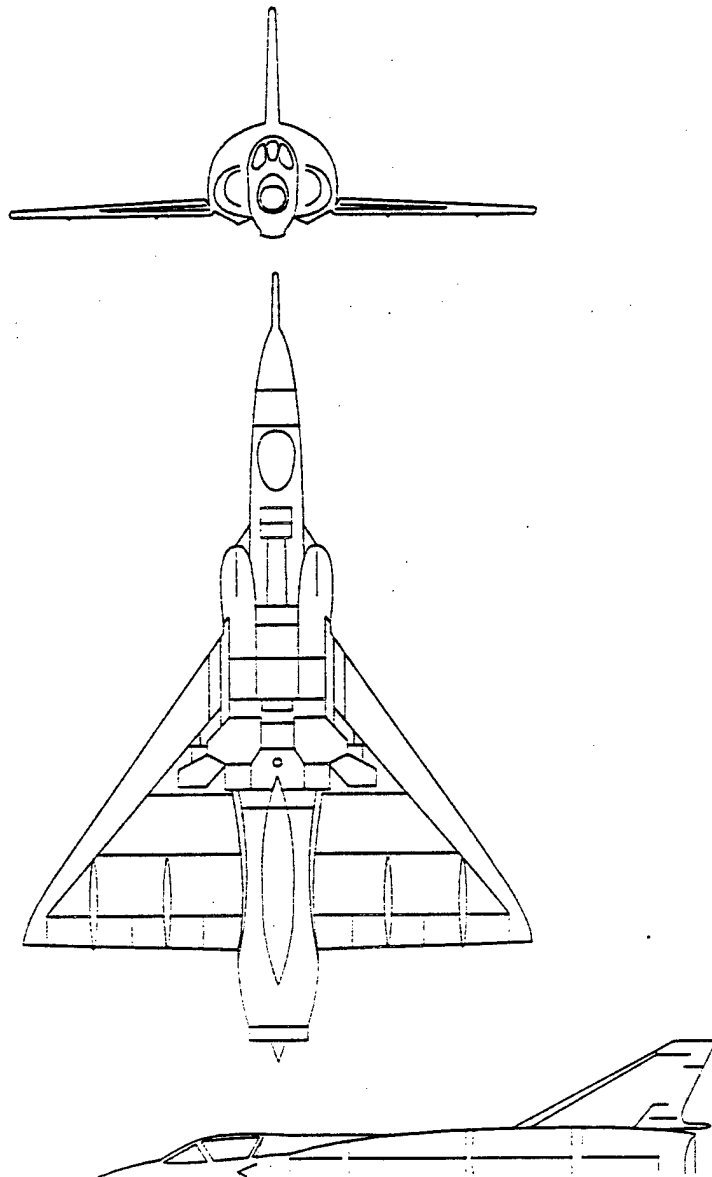
SOURCE: CHARISMA

ersion: 2.1

onverter: CGMTI

ersion: 3.9 (BETA)

ate: 07 December 1992



10.4.10 Output Ventura Publisher

MIRAGE III CLIPART

FILE NAME: TICGM05.CGM

SOURCE: CHARISMA

Version: 2.1

Converter: CGMTI

Version: 3.9 (BETA)

Date: 07 December 1992

